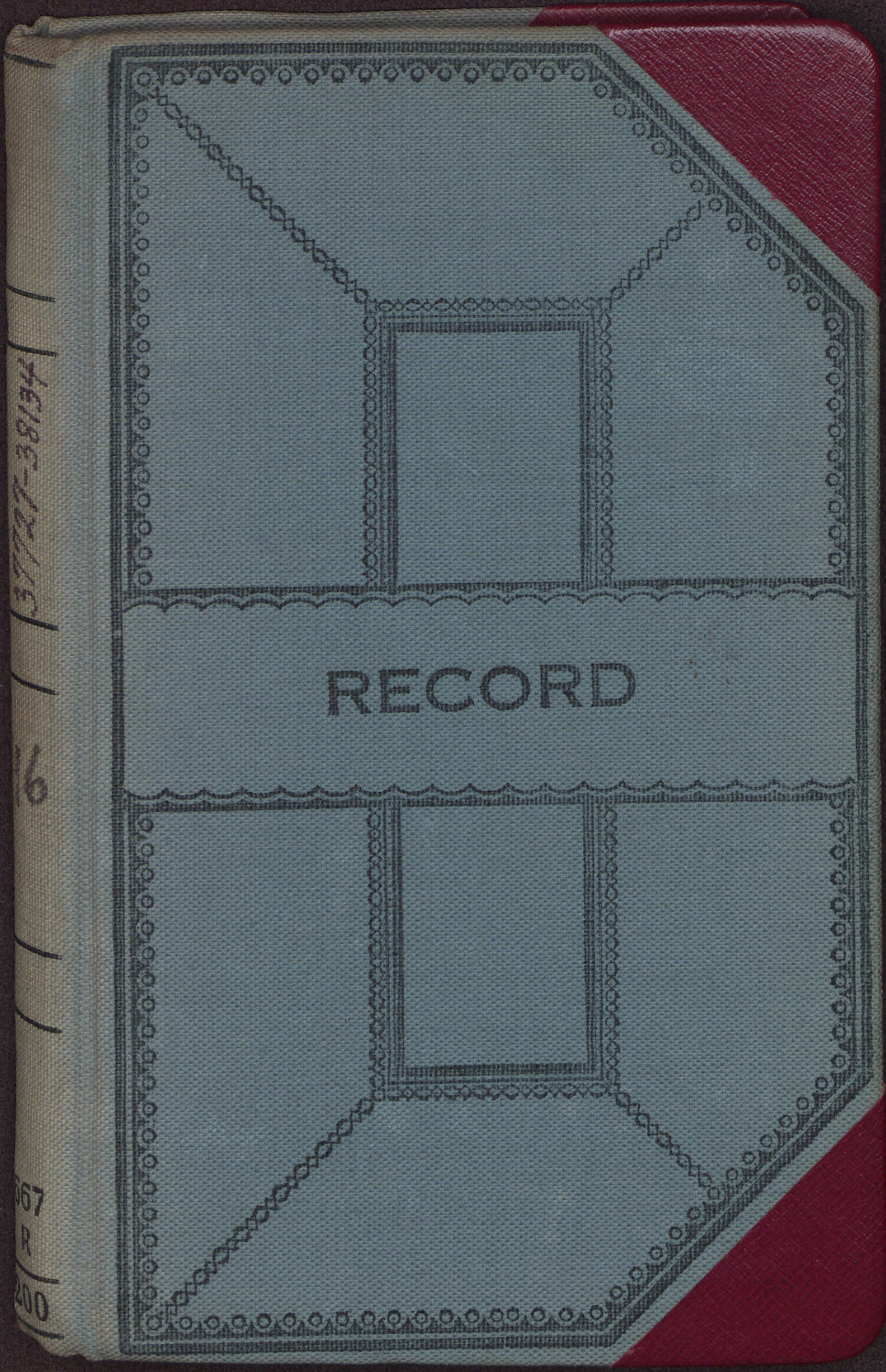

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F. R. Fosberg

Collection and Field Note Book

No. 46

(June 25, 1956 -- Aug. 6, 1956)

(37727 -- 38134)

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Changes in names of Ryukyu plants

✓ 37224 Pteris semipennata var. dispar (Kunze) Baker
✓ 37366 " " "

✓ 37227 Pteris ryukyuensis Tagawa.

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(170-178 on
photo 940-32)

1952 Ryukyu Is.
ISHIGAKI ISLAND,

June 25 - just above Waterworks

Patch of Acacia confusa plantation with little undergrowth, dense canopy.

Clump of a small bamboo formed a dense clump, with very short runners coming out from it.

June 25 - intersection of coast road with road to Nagura.

Patch of woods.

On outer edge appears to be mainly Ficus, 2 spp. with ~~some~~ Clerodendrum, Calophyllum, Bischoffia, and a border of Leucaena.

Small dark area on
170 photo is a thicket of clumps of bamboo about 3-4 m. tall, canes arching, bases of clumps up to 1 m. diam. spaced about 2 m. apart. Canopy complete ground cover of Aplismenus

and a creeping piperaceous 13.
vine.
One habu seen here and collected. Curled up at the base of a bamboo clump, color blended very well with that of ground.

171 An area of Leucaena, pure stand, essentially, about 6-8 m. tall, stems all sizes up to 5 cm. thick. Spaced 1 m. or less apart. No undergrowth or ground cover except Leucaena seedlings.

172 Clearing overgrown with Imperata, scattered pine saplings, one or 2 Acacia bushes, and many Leucaena saplings. Ipomoea indica and I. littoralis.

173 Secondary thicket of saplings of Clerodendrum, Ficus (cordate lfd. sp.), Macaranga, Trema, etc. a few larger trees of Trema and a large lfd. sp. of Ficus. Oplismenus, etc. on ground.

174 On escarpment overlooking marsh the thicket is larger, more mixed of Ficus, Hibiscus, Melia, Pipturus, Pandanus, Mallotus, Macaranga, Cerbera, Clerodendrum, etc. Locally patches of Leucaena, even more locally, Arenga.

June 25

(175) very weedy fallow field has almost a solid growth of:
a Paspalum conjugatum
a Digitaria sp.
c Commelina diffusa
c Gynura
o Ageratum conyzoides
c Cyperus 2 spp.
o Fimbristylis
r. Conyza canadensis.

adjacent abandoned area has a 1-1.5 m. growth of Mallotus, Clerodendrum, Sambucus, Solanum nigrum, Setaria palmifolia, Rubus sp. Boehmeria sp.

(176) Secondary forest adjacent:
a Mallotus.
o Ficus
f Clerodendrum
f Macaranga
c Trema
r. Podocarpus

farther in

is locally some Acacia, Melia etc. Melanolepis, Largest trees are Trema General canopy of about 6-8 m. most trees about 5 cm. dbh. some up to 10. Some undergrowth of Maesa, ferns, Alocasia, Mallotus seedlings (very spindly) occasional very spindly Miscanthus. Spacing of trees 1-3 m. where they are larger the spacing is wider, smaller, close.

(177) Up the slope are newly cleared areas
(178) in a taller secondary(?) forest on post. Miocene limestone.

This forest is up to 10 m tall, dense has several spp. of Ficus, Macaranga, Melia, Bischoffia, Ardisia, Melanolepis, Diospyros tangled with Flagellaria and Ipomoea, Smilax, Caesalpinia Undergrowth of Psychotria, Alocasia, Arenga & others on ground.

The weeds in the newest clearings are Gynura, Solanum nigrum, Melothria, Ipomoea indica, etc. Sesamum is planted on the newest one, not much of a crop.

There are ~~2 or 3~~ 3 or 4 post-miocene terraces here, cut by a deep ravine. The surfaces are not especially rough except locally. One deep sink hole or collapsed cavern was noticed.

June 25 just above waterworks, south of Maishi Take

37727 (~~bamboo~~) Bambusa multiplex (Fr. & Savat.) Makino
one clump on sloping ground at edge of acacia plantation

June 25 ~~just~~ east of ~~Kg~~ Kādō Beach, lower north~~west~~ slopes of ~~Maishi Take~~ Uso Dake

June 25 – 1 km. s. of Mase-take
A patch of "rock pasture" land with rough limestone protruding through the surface of the soil. The vegetation is thick grass, mostly Imperata, and a few scattered bushes.

179 (Photo 940-7)

det F. A. McClure

60 m.

dense clump with short runners formed by downward curving branches, ending in erect culms up to 4 m. tall, green.

25–~~60~~ 60 m.

The weeds in the clearing are largely Gynura,

25-60

37728 Momordica
4 growing in dooryard

5 29 Mallotus japonicus M.-A.
dominant in second growth
forest on low ground.

5 30 Trema orientalis (L.) Bl.
scattered in second-growth
forest

1 31 Psychotria liukiuensis Hatusima ?
occasional

3 32 ~~(orchid)~~ Nervilia aragoana Gaud. det L.A. Garay
small colony in forest
~~on~~ on level ground.

1 33 Youngia japonica (L.) DC. OK
rare in new clearing,
on rough limestone boulder

June 25 – just east of
Kudo Beach, ~~north of~~ n. w. of
Maishi Take
~~On~~ in old field with grass
and bushes.

6 34 Leucaena glauca (L.) Benth.
common, dominant in
surrounding thickets.

prostrate, flowers yellow,
fruit extremely warty,
used as food. ~~"ta"~~ "nigauli" "(?)"

small tree 4 m. tall.

tree 6 m. tall, fruit
dark purple when ripe.

31 shrub 1 m. tall, ripe
fruit size and
appearance of a small
red cherry.

32 erect, sheaths bronze
purple; flowers light
green with whitish
lip with dark purple
veins. ~~corm~~ depressed
globose, white, firm fleshy.

33 flowers yellow.

34 shrub 2 m. tall (others
to 6 m.) flowers white
turning salmon color.

1950 Ryukyu Is.

I. congesta R. Br.

37735 Ipomoea indica
5 common

5 36 Ipomoea littoralis
common

5 37 (cucurbit.) Trichosanthes bracteata Voight
in thickets

twining over bushes, extensive; flowers light blue.

— twining over bushes; flowers rose pink, maroon in throat.

— extensive vine, climbing over small trees; flowers white on erect inflorescences, falling when touched, corolla lobes conspicuously fimbriate.

1956 Ryukyu Is.

June 26 - Kobama+Shima
from boat passing to south
and east

The island is of rather low relief, with one hill rising to a little less than 100 m. It is generally grassy on the ~~south~~ northeast side. ~~So~~ A patch of wood about in the center, several small bits of wood ~~at~~ on the terrace around the hill, and scattered trees on the south~~west~~ east plateau.

From a distance the grass looks like Imperata, judging by the color.

Sand bar a couple of miles east has a clump of bushes which has accumulated a small dune.

Several rocks, of chert ?, in this area, have no vegetation visible from about 1 km. ~~south~~.

On northeast side of Kobama the bluffs and rough places seem to have some sparse scrub as well as grass. Littoral forest & scrub back of beach in central part.

The small flattish island north of Kobama, "Rabbit Island" is entirely grass covered except a small clump of trees or large bushes in the center at the top of the low knoll and some littoral scrub at the east end. It is surrounded by low cliffs.

Northwest end of Kobama is quite brushy

June 24 Iriomote Jima

The ~~south~~ east and ~~east~~ north coasts are very abrupt and generally wooded.

Along the ~~eastern~~ northern part of the ~~south~~ east coast are many truncated spurs with sloping terraces at their bases. Many of these spur faces and terraces are grassy, giving a pattern of irregularly triangular light green scallops, points up, against the dark green background of the wooded mountains.

Landslide scars are numerous and in various stages in revegetation. There is no question but that these provide a chronologically continuous series of habitats on an island like this which, otherwise, before man would have provided no open upland sites.

There seem to be large areas of bamboo on the tops and upper slopes of some of the high mountains, especially those on the ~~so~~ north east corner

Below along the north coast near the east end is a flattish park-like terrace with grass and scattered trees. Headlands are wooded or scrub-covered. The scattered trees on the terrace are mostly pine. The headlands are rounded domes of limestone with smooth cliffs around them.

Several large deep valleys. These seem to have larger trees and more uneven canopy than the ridges and general topography, where the canopy seems smoother and finer textured.

Toward the center are some black sandstone(?) cliffs at high altitudes, with apparently caves in them.

Scattered all along the north coast are patches of the park-like terrace with pines mentioned above. These have wooded ravines.

A large bay has a fine vertical waterfall at the head of one of its valleys. On ~~the west~~ both sides of this bay are many undercut limestone remnants. Some of these are on a small island in the mouth of the bay. They are very rough and covered by pandanus scrub in large part.

The village of Funaura is on the west side.

Trees in village are Hernandia, Hibiscus tiliaceus, Heritiera littoralis

The country back of Funaura toward Uhauchi is covered by Imperata with scattered pines, locally clumps of Cycas and Pandanus. Crowns of [illegible] wooded with a few

patches of sugarcane. On higher ground a few patches of sweet potatoes and dry rice.

Hills round about wooded

Beach-ridge along coast covered by a littoral forest of Hibiscus, Pandanus, Guettarda, Pipturus, Pouteria, Hernandia, Scaevola, Allophylus, even Garcinia, Bischoffia. Back of it is a depression with Imperata, Artemisia and weeds.

Back of this low hills with a mixture of Imperata and Pandanus thickets, scattered clumps of Cycas and occasional pine seedlings. Some patches of Gleichenia.

Scrubby forest back of this.

At Nozaki Bridge is a low flat between 2 streams, Part of it is in rice, part in thickets of Excoecaria, Pandanus, Scaevola Premna, Hibiscus, Cycas on higher spots, a little mangrove on margins of estuary on west side.

Ryukyu Is.

June 26 - Hatoma Shima from boat passing a couple of miles to south

The island looks generally flat and of rather low elevation, with a plateau-like hill in the center. Villages are conspicuous. The island presents a wooded appearance to the sea, possibly mainly of Acacia confusa and Ficus. Probably the Acacia at least, is mainly in hedges and thickets planted around fields, but this cannot be seen from the sea.

After passing a small village the road goes over some low hills of porous limestone covered by thickets in which Ficus, Arenga, Pipturus, Hibiscus, Erythrina, Musa, Macaranga, Melanolepis are prominent, also Melia, Broussonetia, Pandanus, Mallotus, Pouteria, Alocasia
(to p. 20)

June 26 Iriomote (Ctd.)

This littoral forest extends in both directions from the bridge on a dune ridge. Westward this expands into a flat. Here is a clumpy version of the forest, clumps 3-4 m. high, spaces between them filled by Imperata and weeds. Tetrapanax papyrifera local here, all sterile, plants up to 2 m. tall.

(H on p. 19 Cycas)

Between limestone outcrops are cultivated patches of sugar cane and sweet potatoes.

Going down from this another village is approached. Here an edge of a paddy field is eroded away, exposing a bed of shells—Trochus Tridacna etc about 5 dm down. Shells look well preserved.

This village (Uebaru) is on a low flat, largely in rice.

On the other side of this village are low sandstone hills covered by Miscanthus and scattered miscellaneous bushes, a few pines. Here is the coal mine.

This gives way to a few porous limestone hills with thickets. Then a line of sandstone cliffs back of a broad sandy flat. The cliffs have mixed broadleaf and pine forest on them, quite thick, with a few Livistona and much Arenga.

The sand flat has thickets of young Casuarina.

At Uranchi are spectacular cross-bedded sandstone cliffs and a pyramid in the mouth of the bay. Pines, Pandanus etc. on the cliffs but they are mostly bare.

On the other end of the sand flat are high undercut cliffs of limestone capped by thickets.

South of Urauchi the coastal hills are covered by an open growth of pines with low tangled vine-covered scrub and some grass between. Obviously at one time a pine savanna which, not being burned, is now growing up to second-growth between the pines.

June 24 - Sonai Point

west of landing there is pitted limestone, both as cliffs and huge boulders on the beach. On the cliffs the vegetation is largely Pandanus, Ligustrum, Cycas, Diospyros, Hibiscus, etc. On the rocks just at or above sea level is a special flora of Limonium, Illecebrum?, Hedyotis, Sedum, Zoysia, Carmona, etc.

The rock changes, westward, abruptly to sandstone. The special flora disappears and is here not replaced.

The vegetation on the sandstone cliffs is not as luxuriant as on limestone, and is dominantly Pandanus and Scaevola. A number

of ferns; eg Pteris, Sphenomeris, Adiantum, and a large Sedum are found in the crevices, with a little Hedyotis albidopunctata, and Fimbristylis cymosa.

Cycas and Diospyros ferrea are occasional in the cliff scrub.

(copied from other notebook).

The flora of the saline limestone surface, Illecebrum?, Limonium, Carmona, Hedyotis, Zoysia, Sedum, disappears abruptly when rocks turn to sandstone, partially reappears on a bit of limestone at the end of the point; then on soft sandstone, only Hedyotis and Angelica persist, the Hedyotis in small amounts. On the sandstone are several ferns, Fimbristylis, etc. that are not on limestone. Ischaemum on both. Large plants: Pandanus, Cycas, Scaevola, Diospyros on both.

1956 Ryukyu Is.

Funawa
June 24 – N. of ~~Funading~~

beach forest on sand
ridge and flat

37738 Lysimachia mauritiana Lam.
2 in full sun on sand

2 39 Sorghum ~~halepense~~ S. propinquum (Kunth) Hitchc. det. A. Chase
along road, in sun.

2 40 Tetrapanax papyrifera (Miq.) K. Ko
in open ~~at~~ T. papyriferum

2 41 Carmona retusa
occasional Ehretia microphylla Lam.

3 42 Scaevola sericea Vahl
very common

2 43 Ligustrum japonicum Thunb.
common

2 44 Antidesma pentandrum var. barbatum Merr.
occasional

June 26 Sonai

a. ~~Diplanthera wrightii~~
b. ~~Diplanthera~~ Halodule uninervis (Forsk.) Aschers. (narrow-leaved form) det. C. den Hartog 1969 (all these plants are under No. 37745a)
45 c. Zostera japonica Aschers. & Gr. (a few leaves)
d. Halophila ovalis (R. Br.) Hook. f. (2 very small plants)
abundant in shallow water
on sand bottom

4 46 Begonia fenicis Merr. (= B. botoensis Hayata)
on shaded very rough
limestone

2 47 Sedum formosanum N.E. Br.
~~on~~ in crevice on sandstone cliff.

Iriomote I.

2 m.

38 flowers white.

40 shrubs about 2 m. tall,
sterile.

41 ascending shrub,
flowers white, ripe fruit
orange-red.

42 shrub 1.5 m. tall, flowers white,
fruit white (calyx lobes
not especially variable,
flowers vary from white
to somewhat purplish).

43 shrub 3 m. tall, fruit
immature.

44 shrub 2 m. tall;
immature fruit eaten,
pleasantly acid.

0 m. sterile, rhizome buried.

20 m. 46 leaves fleshy. flowers
white.

5 m. 47 dried fruiting plant only.

1956 Ryukyu Is.

37748 Gonostegia hirta (Bl.) Miq.
common on ~~san~~ weathered sandstone

3 49 Sphenomeris chinensis (L.) Maxon
crevices in sandstone cliffs

3 50 Pteris fauriei Hieron. (atypical)
~~crevices~~ sheltered crevices in sandstone cliffs.

5 51 Pandanus tectorius var. liukiuensis Warb.
abundant, generally, on sandstone cliffs.

2 52 Fimbristylis cymosa (~~[illegible]~~) R. Br.
rare in crevice on ~~top~~ sandstone cliff

2 53 Hedyotis
occasional in crevice on sandstone cliff

3 54 Pittosporum tobira (Willd.) Ait.
common on limestone cliff

5 55 Diospyros ferrea var. buxifolia (Rottb.) Bakhuizen
common on limestone cliff.

2 56 ~~Gnaphalium~~ Peucedanum japonicum Thunb.
common on rough limestone just above sea level.

2 57 Hedyotis Oldenlandia crassifolia A. DC.?
~~abundant~~ common on rough limestone just above high tide level

3 58 ~~Blechnum~~ Philoxerus wrightii Hook. f.
abundant on rough pitted limestone just at & above high tide level.

2 59 Limonium arbusculum (Maxim.) Makino
common on rough limestone just above high tide level

Iriomote I.

2-5 m. branched herb.

↓

shrubby tree 3 m. tall. fruit head subglobose, basal fleshy part of phalanges swollen; ripe fruit orange red.

caespitose

53 prostrate, fleshy, flowers white.

5 m. 54 shrub, fruit immature

5 m. 55 shrub; fruit yellow.

3 m.

2 m.

1 m. 58 prostrate, fleshy, matted; flowers pink.

1 m. 59 dwarf shrub, compact; flowers lavender.

Ryukyu Is.

37740 Sedum uniflorum H. & A.
1 rare on rocks ~~past~~ above high tide level.

June 26 - Shirahama
common on weathered sandstone banks.

2 61 ~~Andropogon~~ Pogonatherum crinitum (Thunb.) Kunth det. A. Chase

2 62 Lycopodium cernuum L. *

Hoka
~~Naka~~

June 27 - ~~Ditto~~ Banare + Shima
on beach ridge along inner beach

63 ~~Cle~~ Callicarpa japonica var. luxurians Rehd. det. H.H. [illegible]
inner edge of beach scrub

64

opening in beach scrub

Beach scrub here mixed, 1.5 - 3 m. tall, dense.

f Scaevola sericea
f Messerschmidia argentea
f Hibiscus tiliaceus
c Clerodendrum inerme
c Pittosporum tobira
f Miscanthus floridulus
o Diospyros ferrea
o Callicarpa
c Premna obtusifolia
f Pandanus
o Sonteria
o Guettarda speciosa

Iriomote I.

2 m.

20 m.

2 m.

61 tufted.

62 creeping, with erect fruiting stems.

63 shrub 1 m. tall. flowers lavender.

64 leaves subcoriaceous; flowers lavender.

June 27 - Shirahama
Around Shirahama the lower hills are partially cleared and in Imperata with scattered pines.

The forest here is quite moist. Ferns are abundant. Freycinetia is found down to a low altitude.

June 27 - Nakara-Gawa trip up by small boat
This is a drowned valley. The entrance is between bluffs of sandstone 10-15 m. high, on the north side wooded down to the water, on south side the lower cliffs are bare.

Pines are left behind at the entrance and the only dominantly non-woody vegetation from there on occurs on landslide scars and several small rice patches in mouths of small ravines just above valley mouth.

0.5 km or so up the river extensive low mangroves start on the south side. Up a little it shifts to north side. Seems to be on concave sides of curves and in indentations.

The forest on the bluffs seems rather scrubby. Ferns are conspicuous.

The forest of the main slopes seems to be largely of Quercus cuspidata, so far as can be made out from the boat.

The mangrove up a mile or so is largely Bruguiera some Rhizophora and Lumnitzera racemosa. A small clearing here on left (north) bank.

Above this the river narrows, the mangrove ~~gets~~ diminish to narrow bands along the banks, Rhizophora drops out, ferns become more noticeable on the cliffs.

Above this the river forks and at the fork is an extensive mangrove swamp. The mangrove in this whole area does not seem to be more than 2-3 m. tall above high tide; is taller up-river than at the mouth.

Another mile or more up the mangrove becomes more and more replaced by Pandanus thicket of about the same stature. Both mangrove and Pandanus here become 4-5 m. tall.

The river meanders through broad flats in the left fork of the valley. These flats are 1-2 m. above high tide. On higher spots the Pandanus is mixed somewhat with Diospyros ferrea some Barringtonia racemosa, Rhus, Mallotus, Bischoffia, Macaranga, Arundo donax, Hibiscus tiliaceus.

A few rice patches scattered along this flat. Bruguiera and Lumnitzera still common well up the river, but other more mesophytic trees become more and more common. Also a small bamboo. More rice patches till most of flat is covered by them.

The steep slopes and mountainsides above continue to be densely forested, probably largely with oak. Where the meanders approach the cliffs the oak comes down to the water. The forest is festooned with great tangles of Freycinetia. Ferns are very luxuriant. Mangroves finally drop out, well above the limit of brackish water.

Barringtonia becomes common, Fraxinus, Xylocarpus, bamboo, Eugenia jambos, Ficus.
The flat becomes quite narrow and the vegetation more luxuriant.
Finally, at head of navigation flat disappears

Helen Foster went to top of the high hill behind Shirahama. Forest here mainly Quercus cuspidata, as far as large trees are concerned, but nothing larger than 30 cm. dbh and 10 m. tall.
Second story of smaller trees dense enough to shade out most undergrowth. Soil a thin yellow sand with almost no humus.

Mr Toyama of USC says most oaks over 30 cm dbh are not sound in this district.

Miscanthus seems to come in first when land is opened up. Gleichenia comes in on landslide scars or where soil is eroded away. Apparently repeated disturbance and burning favors Imperata. Pine is found only in coastal areas and probably is a good indicator of past disturbance.

even where growing in mixed forest now.

Yaka-banare-shima is pretty well denuded on seaward side. Some Cycas and Pandanus thickets on upper slopes, Imperata between. A line of vertical cliffs, nearly bare. Talus below thickly grown with a mixture of Miscanthus, Pandanus.
Outer part of south side about bare except for a patch of scrubby wood on talus. Inner part with many pines.
and on cliff above on one corner. In this on a completely inaccessible cliff top is a clump of Livistona.

Cycas absent on western-most slopes and cliffs, which have mainly Miscanthus.

June 27 ~~Funak~~ Funauki

Hills here are wooded to base, lower slopes rather disturbed, with some pine, some Miscanthus Livistona on bluffs, tops of lowest hills covered by pine groves.

Trees in town are Garcinia, Calophyllum, Ficus, Morus, Casuarina, Citrus.

Funauki bay has slopes coming almost to water, wooded all the way. Scarcely any bare cliffs, except on Uchi-banare shima.

Uchi-banare shima shows various stages in degradation of vegetation from thickets with pines through Miscanthus with pine, Imperata with pine, Imperata without pine, progressively toward outer headland.

Beyond Funauki the headlands and spurs tend to be grassy. Scattered pines on these and also in thicket behind them.

June 27 Amatori

Surrounding hills are grassy, with scattered pines high on slopes, clumps of Cycas on lower slopes. No real forest within almost 1 km of village. Village lives by cutting wood! Many trees around village — Hernandia, Hibiscus tiliaceus, Pouteria, Pandanus, Messerschmidia, Terminalia catappa, Casuarina, Ficus, Morus, Garcinia.

Beach ridge with beach scrub extending eastward from village.

Immediately back of village some steeper bluffs have thickets of Pandanus and various bushy trees, Garcinia, Pine, Livistona, much Miscanthus.

Between these bluffs and village a belt of paddy fields, one patch of Nelumbo. Some small reed brakes — Phragmites karka.

Village streets lined with rows of tall Garcinia. Several tall Livistona.

Broad beach has well developed belt of Ipomoea pes-caprae, Vitex, Spinifex, Wedelia biflora in front of beach scrub

Some of the hills overlooking the shore on both sides of village have thickets of bamboo mixed with cycads and Miscanthus.

June 27 – The general pattern of the vegetation of this west coast of Iriomote seems to be dense rather low forest on the high mountain slopes, this predominantly of Quercus cuspidata. There is not especially dense undergrowth or luxuriance of ferns on the high slopes up to 200 m. at least. The trees are, in general, not large.

nothing known of slopes higher than 200 m. except that from the sea they look the same. Landslide scars are common on the steep slopes, covered by Gleichenia or Dipteris.

The deep valleys have similar oak forest on their walls, but wetter and with masses of ferns and Freycinetia. Steep slopes are often completely covered by large ferns.

The lower, tidal parts of the valleys, drowned to a considerable depth, have Pandanus, Barringtonia racemosa, and other swamp species along the rivers, then flats appear covered by Pandanus thickets and mangrove, with paddy fields in suitable places. These flats give way to extensive mangrove swamps on the concave sides of meanders, with Bruguiera, Lumnitzera then increasing proportions of Rhizophora. Excoecaria common generally along these river margins.

On the ridges, toward the sea the forest degenerates to thicket with scattered pine trees or grassy pine groves. This gives way to Miscanthus with pine, Pandanus thickets on steep places and in ravines, mixed with other things. The headlands may have Imperata either with or without scattered pines. Some may have Miscanthus.

Flat bottoms of small valleys may have rice fields ~~or~~ or Imperata and thickets.

Beach ridges are characteristic across small valley mouths and have dense beach forest or scrub with Hernandia, Scaevola, Pouteria, Hibiscus, Messerschmidia, Guettarda, Diospyros, Pandanus, Allophylus, Premna, etc. At the top of the beach may be Ipomoea pes-caprae, Vitex, Spinifex, Thuarea, Ischaemum,

On some beach ridges and sand flats Casuarina is abundant.

etc. making a belt that attenuates out down the beach.

Where there are limestone rocks along the shore or low rough limestone cliffs the scrub or scrub forest is thicker and richer in species than on sandstone. It is dense and tangled, the abundance of Pandanus making it difficult and painful to traverse, this in addition to the dissected limestone or "feo" surface.

Along the rocks at about high tide mark or just above, on limestone rocks is a characteristic community of compact halophytic plants, mainly Limonium, Hedyotis, Illecebrum (?), Ischaemum, Angelica, Carmona, Sedum, etc. This is absent on similarly placed sandstone rocks.

The bottoms of the bays where 2 m. or less deep are covered more or less by acoroides and where exposed or almost at low tide, by other marine seed plants.

1956 Ryukyu Is.

Hoka
June 27 – ~~Hoka~~ Banare + Shima
in beach scrub on sand
ridge back of beach

37765 Vitex trifolia var. simplicifolia Cham.
2 common in edges of
3 66 Scaevola sericea Vahl
very common
2 67 Allophylus timorensis (DC) Bl.
occasional

June 27 – Amatori
at top of beach
3 68 Ipomoea gracilis R. Br.
~~pro~~ occasional
2 69 Clerodendrum inerme (L.) Gaertn.
common at edge of scrub
2 70 Thuarea involuta (Forst.) R. & S.
~~pro a~~ on sand
2 71 Wedelia biflora (L.) DC.
very common
3 72 Amaranthus gracilis Desf.?
common at top of sea wall
where rubbish is thrown.
2 73 Amaranthus
common at top of sea wall
where rubbish is thrown
2 74 Sambucus
common in shade of beach
forest.

2 74a Euphorbia ~~atoll~~ chamissonis Boiss.
E. atoll G. Forst.

Iriomote).

2 m.

almost prostrate;
flowers violet.
shrub 1 m. tall;
flowers white.
67 shrub 1 m. tall,
flowers white.

1-2 m.

68 prostrate on sand; flowers
rose purple maroon center.
69 low shrub, flowers white.

70 prostrate, flowering
branches erect.
71 prostrate, flowers
yellow.
72 much branched herb.

73 branched herb.

74 herb or weak shrub
1 m. tall, flowers white,
large glands yellow.

1956 Ryukyu Is.

June 27 – Funauki

in waste places and edges of rice patches

37775 Eragrostis amabilis W. & A.
2 common

1 76 Cyperus compressus L.
occasional

2 77 Cyperus polystachyos Rottb.
occasional

3 78 Cyperus javanicus Houtt. OK S H Kern
common

3 79 Ranunculus sieboldii Miq.
common in damp places

1 80 Morus australis Poir. var.
planted along village street back of sea wall

June 27 – ~~ta~~ near head of tidal influence on Nakara-Gawa ~~just above~~

5 81 Rhododendron
occasional

2 82 (Melast.) Tashiroea yaeyamensis Matsum.
occasional

3 83 Mallotus japonicus M.-A.
common

May 27 Shirahama
around dwellings

4 84 Euphorbia thymifolia L.
2 85 Euphorbia prostrata Ait.

Iriomote I.

2 m.

76, A. dup.

78 caespitose, leaves gray-green

79 prostrate; flowers yellow

80 tree 5 m. tall.

1 m.

81 shrub 1.5 m. tall, flowers a beautiful flame-crimson.

82 low shrub, flowers pink.

83 small tree or shrub 3 m. tall (staminate – (fruiting plant with capsules ~~other~~ with soft processes – not collected)

2 m.

84 ~~prostrate~~

85 prostrate, purple

1956 Ryukyu Is:

June 27 ~~Yaba~~ Hoka Banare-shima
on beach ridge on inner
side of island

37786 Ipomoea pes-caprae (L.) Sweet
1 uncommon here

4 87 Melanolepis multiglandulosa
Mallotus moluccanus (L.) M.-A.
common in scrub

1 88 Youngia japonica (L.) DC.
rare in shaded paths

1 89 Digitaria sanguinalis (L.) Scop.
common inside

1 90 Phyllanthus
Breynia
rare in scrub

2 91 Spinifex littoreus (Burm.) Merr.
common at top of beach

2 92 Messerschmidia argentea (L.f.)
common in scrub

2 93 Sesuvium portulacastrum
common at top of beach

3 94 Chenopodium acuminatum Willd.
common on beach

2 95 Hibiscus tiliaceus
Thespesia populnea
common in ~~s~~ scrub

3 96 Pouteria
Litsea japonica (Thunb.) Mirbel
common in scrub

1 97 Sonchus oleraceus L.
rare along path

2 98 Artemisia capillaris Thunb.
common in shade

2 99 Crinum asiaticum
common at top of beach

Iriomote I.

1-2 m.

prostrate creeper,
flower bright rose purple.

shrub 2 m. tall.

flowers yellow.

OK A. Chase

shrub 1 m. tall; flowers
yellow.

OK A. Chase

forming large
loose mats, blue-green.

Johnst.

shrub 2 m. tall,
leaves fleshy, silvery
green, fruits fleshy.

loose mat half
buried by sand, flowers pink.

shrub 3 m. tall; flowers
yellow with maroon
centers and stigmas.

small tree, 4 m. tall.

flowers yellow

much branched weak
sprawling herb; flowers yellowish.

scapes axillary in
rosettes, 1 m. or less tall; flowers very
fragrant, perianth white, filament and
style maroon purple.

1956 Ryukyu Is.

June 29 - north of Ozata
just n.e. of Kara-dake
scrubby forest on
Eocene limestone, much
dissected large knob.

Forest is dominantly
(179) Ficus spp., Diospyros
maritima, Ardisia,
(photo 950-4) Pandanus, Arenga,
some Croton and Psychotria
in undergrowth
some Diospyros ferrea.
Ferns present but not
common, small
green bamboo common
Toddalia and another
spiny vine, also
Caesalpinia.

Pasture nearby on
(180) schist ~~is~~ and a low
ridge of tuff beds
dipping under Eocene
limestone has Imperata
with some Andropogon,
Evolvulus, Wahlenbergia (?)
Blumea spp. Vernonia
cinerea, Osbeckia
Lygodium, Setaria
Psidium, etc.

June 29 - Tozato
left hand Eocene limestone
knob - wooded with
181 a scrubby forest, sparse
(photo 950-(182)) at top, dense at base
dominantly Ficus spp.
Machilus, Diospyros
maritima, Raphiolepis,
Rhus, Ardisia, Garcinia
Melanolepis, etc.
a solid mass of Arenga
in undergrowth -
up to 4 m. high, also
much Alocasia
Forest to 6-8 m., canopy
uneven
a few ferns, Piper
covering rocks very
sparsely. Some Epipremnum
and Hoya.
Limestone is dissected
and jointed into
huge blocks, not too
rough a surface.

(182) Weedy field at base with:
Bidens pilosa
Solanum nigrum
Synedrella nodiflora
Paspalum conjugatum
Digitaria sp.
Imperata cylindrica
Sida
Ageratum conyzoides

1956 Ryukyus 9 7.58

Gynura
Conyza canadensis
Xanthium
Portulaca oleracea

Knob of Eocene limestone
183 back of large one on
right.
(Photo 950-108) Densely covered by
forest of Ficus retusa,
Diospyros maritima
Pouteria, Mallotus moluccana,
(undergrowth of Arenga
Fraxinus, with Pisonia aculeata,
Epipremnum, Flagellaria
Hoya, Pueraria,
Piper, and other vines
abundantly tangled
in it. Nephrolepis and
asplenium nidus common.
at base Pisonia umbellata

In the saddle between
184 this and the larger peak
the forest is mostly
Pisonia umbellata,
with Pipturus, Boehmeria,
etc. arenga, vines.
asplenium on ground.

The forest on the larger
185 knob is more luxuriant,
richer in species.
Has Pouteria, Garcinia,
one more sp. of Ficus,
Hibiscus tiliaceus,
in addition Fraxinus
common. Vines abundant.

1956 Ryukyu I.

~~Gynura~~
~~Chrysopsa~~
~~Xanthium~~
~~Lysimachia~~
~~Portulaca oleracea~~

Ficus retusa dominant on top ridge.
The limestone is dissected into pinnacles. Nephrolepis and Asplenium nidus abundant on top.

Ishigaki

June 29 – back of ~~Tozato~~ Hoshino, Tozato Dist.
on hills of sharply dissected ~~hard~~ Eocene limestone, densely wooded.

37800 ~~Pyrrosia~~ Lemmaphyllum microphyllum Presl
2 ~~creeping~~ ~~climbing~~ on shaded vertical rock surfaces

7 01 (~~fern~~) Bolbitis hidzumii Tagawa
on flat earth surface between

5 02 Asplenium nidus, L.
on bare shaded rock

3 03 Quercus glauca Thunb. miyagii Koidz.?
rare, near top of highest hill

5 04 Bridelia? Glochidion
rare, near top of highest hill

5 05 ~~Smilax~~ Heterosmilax japonica Kunth det. T. Koyama 1957
occasional

7 06 Piper kadsura (Choisy) Ohwi
very common on ground ~~growing~~ ~~and~~ and climbing on tree trunks and rocks.

---

100 m. clinging close to rock; leaves fleshy.

50 m. rhizome scarcely buried; sterile.

Oe. 150 m. large rosette, collecting a mass of dead leaves in center.

150 m. sterile tree 8 m. tall, leaves glaucous beneath.

150 m. tree 8 m. tall; fruit immature.

100 m. vine climbing in trees; fruit immature.

50 m. creeping and climbing vine, dark green; buds very young.

1956 Ryukyu Is.

37807 Pisonia umbellifera (Forst.) Seem.
11 common ~~locally~~ in
saddle and around base
of hills

Colysis wrightii (Hook.) Ching
2 08 ~~Asplenium~~
local on earth in saddle

6 09 Stictocardia tiliaefolia (Desf.)
tangled in thicket (Denn.) Hoo

5 10 Peperomia
common on rocks

5 11 Microlepia strigosa (Thunb.) Presl
rare

same - clearings
and thickets

1 12 (~~Ajuga~~.) Ajuga elatior Ohwi
rare in new clearing
from which dry rice had
been harvested.

1 13 ~~Oplismenus~~ ? Ichnanthus vicinus (F.M.
in shade at edge of clearing

5 14 Alpinia speciosa (Wendl.) K. Schum.
edge of thicket

(Colysis elliptica (Thunb.) Ching
2 15 (~~Asplenium~~
common in damp thicket

---

50 m. OK tree 8 m. tall, 15 cm. dbh.
with soft pulpy brittle
wood; flowers dull
white, stigma like
a smashed brush, slightly
oblique.

100 m. rhizome scarcely buried,
fronds erect, fertile ones
arching.

50 m. extensive vine
yellow f

75 m. fleshy. procumbent.

50 m.

50 m.
↓ flowers white.

OK A. Chase
Bailey) Merr.
prostrate

OK canes 1 m. tall. flowers
waxy, white, staminode
orange with red veins.
fruit ribbed.

1956 Ryukyu Is.

June 29 – ~~just n.e. of Kara-dake~~, 1 km. e. of ~~n.~~ ~~nat.~~ of Ozato.
rolling grassland

37816 ~~Andropogon~~ Cymbopogon tortilis (Presl) A. Camus
2 common on knolls

~~17 Pleioblastus common between limestone.~~

3 17 Fuirena umbellata Rottb.
in wet spot

3 18 Hydrocotyle sibthorpioides Lam.
in damp spot

3 19 Blumea lacera (Burm.) DC
occasional in

5 20 Blumea hieracifolia (Don) DC.
common in

same – on deeply dissected hard Eocene limestone outcrop

1✓ 21 Pleioblastus
common between great boulders

5 22 Cudrania cochinchinensis var. gerontogea (S. & Z.) Masam.
rare in forest

ISHIGAKI ISLAND.

40–50 m.
↓

OK A. Chase caespitose
(seeds sent to

prostrate to ascending.

det J. Randeria 1958

det J. Randeria 1958

60 m.
↓

culms in small clumps from running rhizome; to 2 m. tall, green.

– Slender shrub 2.5 m. tall, lower sterile branches spiny, fruit starting to turn yellow.

1956 Ryukyu Is.

June 20 1.4 km. w. of Ozata

(186) Somewhat dissected alluvial
terrace with medium
(Photo 950-6) Imperata grassland
with an abundance of
several species of Scleria
some Blumea (2 spp.) a little
Pteridium, Elephantopus mollis,
Setaria, Arthraxon, Artemisia
Desmodium (?), Emilia,
Fimbristylis, Sorghastrum
Sporobolus, very small Osbeckia,
Melastoma, etc. Rhynchospora rubra.
probably has been burned
within a couple of years.
(187) Across road has been
burned more recently, is
very sparse, with bare
ground showing.

The surface of the
bog is a thick mat of
grass roots, and rhizomes apparently
over a very soft material.
Walking on it, its resistance
varies from firm to
soft in places yielding
to knee-deep, or in the Pandanus,
deeper.
One sump hole has somewhat
open water and Eleocharis.

Grassy peat-bog occupying
the head of a small dendritic
ravine, the lower part of
which is in rice.
This has a sparse
stand of Phragmites
rather locally distributed
. Between and in these patches
is a dense grass, with
Panicum repens, ~~Pa?~~ Scleria
Cyperus sp., Fimbristylis, Centella
Eriocaulon, ~~Da~~ Thelypteris
gongylodes, Iris?, Osbeckia,
Isachne, Polygonum
Polygonum (large), Commelina.
Phaseolus, patches of Lygodium & [illegible].
the whole about 1 m. high,
very dense.
(188) Locally areas of
impenetrable
Pandanus thicket
with scattered Glochidion
on very soupy muck. In the
grass are horizontal Pandanus stems.
↖ (189) Surrounded on one
side by grassy ridge,
other side by secondary
(190) thicket with Glochidion,
Symplocos?, Rhaphiolepis,
Mallotus, etc.

June 30 – 1.6 km. west of Ozato, e. branch of upper Miyara gawa
in grassy peat bog in broad ravine

37822 Eleocharis ochrostachys Steud. ~~dulcis (Burm. f.) Trin. ex Hensch.~~
7 a local colony in hole with open water

5 23 Lygodium scandens var. microphyllum pro parte
local patches

5 24 Leersia hexandra Swartz
codominant grass

1 25 Commelina
rare

5 26 Isachne globosa (Thunb.) Kuntze
abundant, forming lower story

1 27 Polygonum dichotomum Bl.
rare

2 28 Cyperus globosus All.
rare

2 29 Fimbristylis
rare

5 30 Eriocaulon
locally common

3 31 Cyperus polystachyos Rottb.
common

6 32 Fuirena umbellata Rottb.
common

6 33 Cyperus pilosus Vahl OK J.H. Kern
common in edge of

34 Phylidrium lanuginosum
occasional

5 35 Thelypteris goggilodus

±50 m.
↓
det. H.K. Svenson

culms glossy, subterete, slightly 3-angled.

~~stems~~ fronds extensively twining and tangled, mostly sterile.

OK A. Chase

culms weakly erect; leaves unpleasantly scabrous.

all 3 petals large, bright blue.

OK A. Chase

Cyclosorus goggilodus (Schkuhr) Link

1956 Ryukyu Is.

B. paludosum Roxb. det. A. Chase

37836 (~~Panicum~~ ~~repens~~
3 codominant

3 37 Cyperus elusinoides Kunth
very local

2 38 Monochoria
very local

6 39 Vigna luteola (Jacq.) Benth.
common

1 40 Glochidion
in dense Pandanus thicket

5 41 (~~grass~~) Sacciolepis oryzetorum (Makino) Honda A det. Chase
edge of bog

same - lobe of higher grassland extending into bog. 360 m.

5 42 Fimbristylis dichotoma (L.) Vahl det. T. H. Kern
common

5 43 Fimbristylis
occasional

2 44 Hedyotis diffusa Willd.?
rare

3 45 Torenia [illegible]
occasional.

2 46 Hypericum japonicum Thunb.
rare

5 47 Aneilema
common

5 48 Curculigo orchioides Gaertn. dt
common

bluish green. culms erect.

extensively twining; flowers yellow, keel bent upward but not twisted.

tree or large shrub, fruit ripe and shattering, flowers yellow, almost gone.

flowers purplish

flowers yellow

1956 Ryukyu Is.

37849 Cyperus haspan L. OK J H Kern
5 in wet spot

5 50 Euphorbia paranaquensis Blanco
common

5 51 Dioscorea bulbifera L. (?) forma spontanea
in edge of small thicket

1 52 Cyperus globosus All.
rare

same - grassy open terrace

3 53 ~~Melastoma~~ Osbeckia chinensis L.
occasional

9 54 Scleria levis Retz.

July 1 - 1 km. e. of Ishigaki City

5 55 Diospyros ferrea var. buxifolia (Rottb.)
growing around ancient tombs

ISHIGAKI ISLAND.

erect with arching tips;
flowers white.

(Makino) Makino & Nemoto) flowers at first white,
then purple.

±60 m.

flowers rose pink

20 m.

Bakhuizen erect compactly branched
tree 3-4 m. tall, fruit yellow.

July 3 – 1.6 km. w. of Ozata

(191) (Photo 950-6) Large peat-bog open, grassy, with no reeds, Panicum and Isachne more abundant in proportion to Leersia than in the other bog. Surface mat in ~~most~~ some places flexible. ~~[illegible]~~ Pandanus thickets around edges. These have some Gleichenia and are tangled with Lygodium scandens. They vary much in density and from 1–4 m. in height.

This bog has a much less abundant and less varied sedge flora. Fuirena is the only common sedge.

The bog is fed by seeps from the "gravel" terraces around it. These are abundantly peat covered.

The bog is in some spots a true quaking bog.

Cattle grazing in it

(192) (Photo 950-4) Thickets on steep slopes and in ravine
Ficus erecta
(195) (Photo 945-18) Mallotus Melia
Morus Melanolepis
Raphiolepis Pandanus
Eurya Cerbera
Symplocos Evodia
Elaeagnus Ficus virgata
Smilax Ficus sp.
Schefflera Cyathea
Mussaenda Phyllanthus
Wendlandia Rhus succedanea
Ficus retusa Glochidion Ampelopsis
Miscanthus Ficus wightiana
Gardenia Bischofia
Mallotus paniculatus Premna Angiopteris
Distylium Trema Alocasia
Ardisia bipinnate legume Xanthoxylum (vine)
Callicarpa Celtis? Arenga

(193) (Photo 950-6) (194) Stream bank thickets
bamboo Pipturus
Barringtonia Boehmeria nivea?
Morus
Musa Ficus sp. ribbed fruit.
Pterocarpus
Epipremnum Macaranga
Ficus
Cerbera
Ficus retusa
Arundo donax
Bischofia
Ficus ~~sp~~ wightiana

1956 Ryukyu Is.

July 3. w. of Miyu Dahe, n.n.w. of Kawahara ~~3.7 km. w.n.w. of Moriyama~~

37856 Cyathea pustulosa (Christ) Copel.
3 common in thicket in ravines

5 57 Callicarpa japonica var. luxurians Rehd.
occasional in thicket in ravines

July 3 - 1.6 km. w. of Ozata, upper Miyara Valley
in thickets along banks of stream

5 58 Ficus ampelos Burm. f.
common

5 59 ~~[illegible]~~ Itea formosana H.L. Li
occasional

July 3.
same - steep slope on dissected alluvial terrace

5 60 Euscaphis japonica (Thunb.) Kanitz
commonest shrub in thicket

5 61 Arthraxon hispidus var. cryptatherus (Hack.) Honda id. A. Chase
occasional in grass

5 62 ~~Sorghastrum~~ Sorghum nitidum (Vahl) Pers. [illegible]
common in grass beside ~~[illegible]~~ road

6 63 ~~Sorghastrum~~ (Sphenomeris tenuifolia (S. chinensis (L.) Maxon)
common on road cut wall

1 64 Cassia mimosoides (C. leschenaultiana var. pacifica Ohwi
rare in grass

---

40 m.

tree, with trunk 3 m. tall, leaf scars prominent. varied in size and shape, 3 leaves from same plant; scales on stipe golden-tawny.

det. H. N. Moldenke

erect shrub 2.5 m. tall, flowers lavender, fruit purple.

35 m.

small tree; fruit orange

small tree, flowers white.

40 m.

shrub 3 m. tall ripe fruit reddish, fleshy, dehiscent.

erect

flower yellow

same - grassy peat bog

37865 Phyllanthus
1 edge of bog, rare

46 Paspalum orbiculare G. Forst.
common on edge of bog

5 67 Pandanus
forming thickets in bog

July 3 - Ishigaki Airport
e. of Hirae

5 68 Ipomoea hardwickii (Spreng.) Hemsl.
common in cultivated field

July 4 - west side of Kabira peninsula, 1.7 km. w.n.w. of Kabira

Below the present beach is a long strip of very much eroded beachrock forming an erosion ramp. This is a conglomerate including many non-limestone pebbles of various sorts. It shows evidence of moderate abrasion and some solution but no spall planes.

A. of Chase

tree 4 m. tall, fruit yellow, fleshy base of keys greatly swollen.

40 m. twining; flowers white

There is a low beach ridge of sand, with an irregular somewhat discontinuous scrub of:
Pandanus
Dodonaea
Clerodendrum inerme
Scaevola
Wikstroemia

Below this on the beach is a thin mat of Lippia nodiflora, Thuarea, Ipomoea pes-caprae, Ixeris, Ipomoea littoralis, Spinifex, Euphorbia chamissonis, etc.

Back of the beach
3 ridge is a flat, partly
1 open with thin grass
and small shrubs.
The grass is largely
7 Imperata, but with
several others intermixed.
Prostrate Vitex is abundant
locally. Shrubs are Psidium,
Pandanus, Clerodendrum,
Glochidion, etc.

5 Part of the flat has
a patch of woods.
This is of Ficus?, Bischofia,
Hibiscus, Pandanus,
Celtis(?), Macaranga,
Premna, Melanolepis,
Pisonia umbellifera,
Diospyros maritima,
Pouteria ~~Ficus wightiana~~
Undergrowth of
Allophylus, Alocasia,
+ esp. Glochidion, Murraya,
Garcinia.
On limestone outcrop
Ficus wightiana,
F. virgata, F. erecta
and Arenga are added
and common.

Vines Piper, Toddalia

Shrine forest just
back of beach. Mainly
a grove of Calophyllum
but with a few trees
of Hernandia, Hibiscus,
Distylium, Raphiolepis,
Callicarpa. Shrine
is merely a small
enclosure of rocks
with incense burners.

The reef flat in
front of the low
erosion ramp is
flat and sandy.
A large stiff Codium-like
green alga is common.
~~Enhalus~~ Halophila,
Thalassia and Cymodocea
form thin mats of
rhizomes under the
sand, their leaves
protruding.

July 4 - ~~[illegible]~~ West side of Kabira Peninsula, w. of Shioshi Mori; 1.7 km. w. n. w. of Kabira

37369 Callicarpa japonica var. luxurians Rehd.
3 edge of shrine forest back of beach

5 70 ~~Cymodocea isoetifolia~~ Halodule ~~Diplanthera~~ pinifolia (Miki) den Hartog.
on ~~flat~~ sandy reef, flat det. C. den Hartog 1969

5 71 Halophila ovalis (R. Br.) Hook. f. det. C. den Hartog 1969
on sandy reef flat

3 72 Pisonia umbellifera (Forst.) Seem.
common in forest back of beach

5 73 Dodonaea viscosa
~~comm~~ abundant locally on sandy beach ridge

July 4 - south of Kabira

2 74 (~~Small~~.) Tristellateia australasiae A. Rich.
rare in edge of thicket

---

1 m. small tree 4 m. tall, slender, flowers lavender.

1 m. forming a thin sod, rhizomes buried; sterile.

1 m. forming thin sod, rhizomes buried; sterile.

2 m. tree 8 m. tall; flowers white.

2 m. low bush 0.7 m. tall

10 m.

twining in trees, petals bright yellow, filaments bright red.

July 5 - 2.3-3 km. s.s.w. of Hirakubo

(196) (Photo 945-86) Two conical hills with Cycad scrub.

197 Sparse pine woods on grassy foothills.

198 Patch of wood has been cleared except scattered trees and an extensive set of farm buildings built in edge of it.

(199) This patch is now in sweet potatoes

(200) Post miocene limestone outcrops, the small ones dominated by Cycas, the larger by Ficus spp.

(201, 202) (Photo 949-91) These grassy slopes have been freshly burned - still black.

(203) Mangrove swamp, the lower part all Rhizophora 4-5 m. tall, the upper part Excoecaria with undergrowth of Kandelia, some Bruguiera in uppermost part.

(204) Forest on post-miocene limestone.

(205) Valley bottom forest has Barringtonia and Ficus, etc. but not swampy, growing on broad rocky braided stream bed.

Tangles of Pisonia aculeata and P. umbellifera

Farther up much green dwarf bamboo

Climbing the wall on the left side up to the main central ridge between 2 forks the slope is steep. All vision is cut off by an undergrowth of large clumps of Arenga. It is possible to go through this with a little cutting.

So far as could be seen the forest here ~~[illegible]~~ is principally Ficus and some Diospyros maritima. Much tangled with Flagellaria and Smilax

On the ridge top the Arenga thins out.

Much Ficus, Diospyros, and

Rhus

Undergrowth of Croton, Psychotria, Diospyros saplings.

Up to 100 m. or more there has been considerable cutting.

On up to 200 m. is steep slopes and ridges with mixed forest, with considerable Arenga and various shrubs in undergrowth, much Smilax, Flagellaria, and other vines.

By about 200 m there is some Quercus, but more Diospyros, Lauraceae, Ardisia, etc.

Ferns very common here. Stature of forest 8-10 m. trees up to 20-25 cm. dbh. crooked.

On top of first peak is scrub forest about 5-6 m. tall fairly dense canopy trees up to 10 (or 20) cm. dbh. Little undergrowth incl. some Damnacanthus, Ilex, Eugenia, etc.

Trees are Pouteria, Dendropanax, Cinnamomum? Viburnum, ~~Rapanea~~ Ardisia, Raphiolepis etc.

Tangled with Elaeagnus.

In saddles only a little lower, the forest is about twice as tall, with big banyans and considerable oak. Some recent cutting in this area.

Ridges and upper slopes generally with small wood, logged out some time ago. Old mine workings on ridges with pyrite in debris.

On a high east ~~west~~ slope below a ridge crest of dense low wood about 4 m. high trees to 5 (or 10) cm. dbh. Ilex Cinnamomum Ardisia etc tangled with Smilax, Elaeagnus etc.

Below this to s. ~~w~~ e. is mixed forest with little or no. oaks. Much Ardisia, Lauraceae, Diospyros some Podocarpus (small) Schefflera.

Ardisia, Diospyros abundant, downward more and more Ficus and Garcinia

In lowlands along Yassa-kawa stream is thick forest clear out to beach on east coast. Here Hernandia goes unusually far inland.

Along the coast southwestward there is wood on the low wave-cut cliff. Back of this is generally Imperata grassland on the terrace and in places well up the steep mountain slope.

1956 Ryukyu Is.

July 5 - Yassa-Kawa
e. side of north peninsula.

37875 (comp.) Carpesium cernuum L.
5 lowland thickets along stream.

1 76 Nypa fruticans Wurmb.

3 77 Antidesma? A. pentandrum (Blanco) Merr. (? var. barbatum (Presl) Merr. vel aff.)
occasional on upper slopes of drainage

July 5 - ~~[illegible]~~ ridges north of Hatsua-Yama
in thick moist forest

3 78 Psychotria
common in undergrowth

2 79 Neolitsea Cocculus laurifolius DC.
occasional ~~in~~

2 80 Berchemia racemosa S. & Z.
common locally

5 81 Ilex warburgii Loes.
common on ridge top

1 82 Malaxis
rare Tropidia sp. possibly T. somai Hayata

4 83 (~~[illegible]~~) Polypodium buergerianum Miq.
climbing on tree trunks, rare

5 84 Angiopteris evecta suboppositifolia W.H. de Vriese
occasional

---

10 m much branched herb, disk greenish yellow.

0 m fruit picked up on beach, not known growing on Ishigaki or nearer than Iriomote, where it is very rare.

150 m.

300 m.

shrub 0.3 m. tall, flowers greenish white, fruit red.

shrub, fruits immature

~~[illegible]~~ springy extensive liana tangled in low trees; sterile.

small slender tree, fruit immature.

det. C. V. Morton

rhizome small, globose, frond 1.2 m. long.

1956 Ryukyu Is.

37885 (orchid) Luisia ? teres Bl. det. L.A. Garay
7 on tree trunk

(Distylium racemosum S. & Z.
6 86 ~~Daphniphyllum~~.
common

1 87 orchid
rare on tree trunk

3 88 Damnacanthus indicus Gaertn.
common locally

2 89 Pyrrosia
Lemmaphyllum microphyllum Presl
common climbing
on tree trunks

Kara gawa.
July 5 - ~~stream~~ 2 km.
s. of Hirakubo

2 90 ~~[illegible]~~
Lycianthes biflora (Lour.) Bitter
rare on low rather dry
wooded ridge

3 91 Asclepias curassavica L.
rare along trail

7 92 Kandelia kandel (L.) Merr.
common, forming under-
growth in edge of ~~upper~~
upstream part of mangrove
swamp

4 93 Raphiolepis liukiuensis (Koidz.) Nakai
common on low limestone bluffs

5 94 Adiantum capillus-veneris L.
in crevices in overhanging limestone

5 95 Peperomia japonica Makino
in crevices in overhanging limestone

---

330 m leaves terete, perianth
green, purplish tinged,
lips ~~[illegible]~~ dark maroon
purple inside, green tipped.
—
tree, cut for lumber.

350 m. 88 low bushes 0.6-0.8 m. tall,
flat topped.
—
89 closely appressed to
trunk, fertile fronds
rare, all fronds thinly
fleshy

60 m 90 branched herb 0.5 m. tall
fruit red, fleshy

5 m 91 erect herb 1 m. tall,
flowers with corolla red,
corona orange.
—
92 shrub ~~[illegible]~~ 1-2 m. tall,
flowers cream white

3 m. 93 shrub 2 m. high,
spreading, diffuse, fruit
immature.

1-2 m
95 diffuse, fleshy.

1956

July 7 - north of Shiraho
Thick scrub of
Premna, Hibiscus, Ficus
(206) wightiana, Toddalia,
(Photo Psidium, Pittosporum,
Carmona, Pandanus,
Ficus erecta, Zanthoxylum
(small), Alpinia speciosa,
Cycas, Morinda, Murraya,
Mallotus, Pipturus, Raphiolepis,
Allophylus, Arenga, Miscanthus
Clematis tangled with Ampelopsis
Smilax This scrub is 2-4 m tall
etc. and grows on low
ledges of rough limestone.
Back of it is a considerable
area of rock pasture.
(207) dominated by Psidium.
short Imperata, Artemisia
vulgaris, Rosa,
Lespedeza
A little Scaevola
around brush patches
even well inland
in the rock pasture.
Seaward of the
(208) road is a more
typical littoral scrub
on a sand ridge dominated
by Scaevola, Premna,
and Pandanus, with
Morinda, Allophylus,
some Casuarina, Ficus
Retusa, Calophyllum

---

as scattered trees. Vitex
Toddalia, Zanthoxylum,
Carmona, Phyllanthus, Rosa,
Sophora, Psidium, Wikstroemia
as secondary shrubs.
Imperata, Artemisia
(green), Zoysia as most
Ipomoea pes-caprae important herbs.
Lotus, cassytha Some Euphorbia chamissonis.
This scrub varies from
dense and 2 m. tall to
very sparse and 1 m. or less.

July 7 – s.w. of Ozata

Rounded hills of schist, mostly grassy, with occasional clumps and patches of pine, especially of pine seedlings.

One of the hills mostly well wooded. Viewed from a short distance through binoculars ~~it~~ the forest presents the appearance of a very dense mixture of many species with no one of them dominant. Tree ferns common.

Around the base, on the north side, is a dissected alluvial terrace, the ravines with paddy fields in their bottoms, but with patches of wood in their narrow heads and side branches.

These ravines have a flora of small trees and large shrubs:

(209) Rhus succedanea, (photo Morus, Symplocos sp. 945-14) Ficus 4 spp. Schefflera, Distylium, Premna, Macaranga, Raphiolepis, Pandanus, Trema, Laurac. a Eurya-like, sterile tree very common also the opposite leafed

compound lfd. tree, Arenga, Mallotus paniculatus, Phyllanthus, Mallotus sp. (glaucous), Elaeocarpus japonicus, several other unidentified trees.

Flagellaria, Smilax, Vitis, etc. not too common.

Alpinia speciosa, Lygodium flexuosum etc. around margins.

The alluvial terrace is covered by dense Imperata grassland, with scattered pines.

The forest on the hill, itself has

o Glochidion
o Melanolepis
o Ficus (ribbed fr.)
c Rhus succedanea
o Symplocos sp.?
c Bischofia
o Ficus virgata
o Arenga,
o Evodia
c Lauraceae (Machilus?)
o Ophiorrhiza
c Mussaenda
lc Pisonia aculeata
c Lasianthus
c Mallotus paniculatus
o Boehmeria

lo Ptero~~spermum~~carpus
Ficus sp.
c Psychotria
c Flagellaria indica
o Garcinia
r Clerodendrum trichotomum
lo Ficus retusa
c Ardisia
o Angiopteris evecta
c Camellia japonica
o (tree with axillary fruits and thick pedicels)
c Diospyros maritima
c Morus
c Premna obtusifolia
~~Cinnamomum~~
o Croton
c Neolitsea
lc Trema
o Antidesma
o Mallotus philippinensis
r Elaeocarpus japonicus
r Pouteria
r Quercus cuspidata (rare, [illegible])
r Morinda umbellata
r Randia or Diplospora
r Maesa
r Cudrania ?
r Ficus sp
~~Clerodendron~~
o Callicarpa (small lf.)
o Macaranga
o Schefflera

Freycinetia
(~~rare~~ or climbing in giant Ficus retusa, occasional on upper north slope.)

The general stature of this forest is about 6-8 m. with occasional trees much higher.

Undergrowth varied but generally rather loose except in open spots where it is thick. Ferns very common on ground, especially on north slope. Polystichum, brown-hairy Dryopteris (?), Tectaria common, Asplenium nidus occasional. Oplismenus and the large Oplismenus-like grass common underfoot. Alpinia sp., the white ground orchid, the spiral tall orchid, and Sarcandra occasional.

1956 Ryukyu Is.

July 7 — Akashita, upper Mizara Bridge in wooded flats along river.

37896 2 (~~cucurbit~~) Trichosanthes bracteata Voight
occasional in secondary growth.

✓ 3 97 (~~bamboo~~)
common

98 ~~orchid~~ Nervilia aragoana Gaud. det. L.A. Garay
common in silty soil under trees

July 8, Kafuta, ~~[illegible]~~, Hills southwest of Ozato in rather low scrubby forest on ~~s~~ schist soil

99 (~~orchid~~) Corymborchis confusa Arn. det. L.A. Garay
occasional

37900 8 Pouteria ? P. obovata (R. Br.) Baehni
rare.

6 01 ~~Diplospora~~ ?Tarenna Tarenna gyokushinkawa Ohwi
rare

5 02 Maesa tenera Mez
occasional

5 03 Morinda umbellata L.
rare

5 04 ~~Diplospora~~ Tarenna gyokushinkawa Ohwi
rare

20 m.

vine, tangled in bushes, ripe fruit bright orange, pulp around seeds greenish black.

...terminate,
...tiguous to
...t to 15 m. tall,
lower branches
...spiny.
...ber globose,
broad
separate
...s.

PLANTS OF THE RYUKYU ISLANDS

ISHIGAKI SHIMA

sent dup of this to Kew under Bambusa Tow

Locality Alsashita upper Mizara Bridge in wooded flats along river.

Occurrence Common

Date 1956 Alt. 20 m. (from map)

Coll. F.R. Fosberg No. 37897

Remarks rhizome determinate, culms from contiguous to 20 cm. apart, erect, to 15 m. tall, dark green, lower branches sparse not spring.

Pacific Vegetation Project

...unbranched,
...wers white.

small tree 6 m. tall, fruit immature

01 bush 2 m. tall, slender; fruit green.

02 shrub 2.5 m. tall, fruit immature.

OK 03 scandent shrub, climbing in trees.

04 shrub 2.5 m. tall, fruit with 2 peltate seeds in a cell, not immersed in placenta, immature.

PLANTS OF THE RYUKYU ISLANDS

ISHIGAKI SHIMA

I sent dups of this to Kew under
Bambusa

Locality Alsashita upper Mizara Bridge in
wooded flats along river.

Tom

Occurrence Common

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Remarks rhizome determinate, culms from contiguous to 20 cm. apart, erect, to 15 m. tall, dark green, lower branches sparse not spring.

Pacific Vegetation Project

1956 Ryukyu Is.

July 7 — Akashita, Upper Miyara Bridge in wooded flats along river.

37896 (~~cucurbit.~~) Trichosanthes bracteata Voight — occasional in secondary growth.

2 ✓

3 97 (~~bamboo~~) — common

98 ~~orchid~~ Nervilia aragoana Gaud. det. L.A. Garay — common in silty soil under trees

July 8 — Kafuta, ~~[illegible]~~, Hills southwest of Oyata in rather low scrubby forest on ~~[illegible]~~ schist soil.

99 (~~orchid~~) Corymborkis confusa Ames det. L.A. Garay — occasional

8 37900 Pouteria ? P. obovata (R. Br.) Baehni — rare.

6 01 ~~Diplospora~~ Tarenna Tarenna gyokushinkwa Ohwi — rare

5 02 Maesa tenera Mez — occasional

5 03 Morinda umbellata L. — rare

5 04 ~~Diplospora~~ Tarenna gyokushinkwa Ohwi — rare

---

20 m.

vine, tangled in bushes, ripe fruit bright orange, pulp around seeds greenish black.

rhizome determinate, culms from contiguous to 20 cm. apart, erect, to 15 m. tall, dark green, lower branches sparse, not spiny.

fruit green; tuber globose, soft, fleshy; broad leaves on separate young plants.

120-150 m.

stem erect, unbranched, 1 m. tall; flowers white.

00 small tree 6 m. tall, fruit immature

01 bush 2 m. tall, slender; fruit green.

02 shrub 2.5 m. tall, fruit immature.

ok 03 scandent shrub, climbing in trees.

04 shrub 2.5 m. tall, fruit with 3 peltate seeds in a cell, not immersed in placenta, immature.

1956

37905 3 Ficus erecta Thbg. ?
rare

6 06 Trema orientalis Bl.
rare in wooded ravine

2 07 Vitis lanata Roxb.
common in wooded
ravine.

~~#~~

~~[illegible]~~ July 7 – just north
of Shiraho

5 08 Allophylus timorensis (DC.) Bl.
common in scrub on
broad sand ridge

6 09 Morinda citrifolia var. bracteata
M. citrifolia L.
common in scrub on
broad sand ridge

5 10 Premna obtusifolia R. Br.
common in scrub on
broad sand ridge

(Teucrium viscidulum var. miquelianum (Maxim.) Hara
11 ~~Stachys~~ ?
common on ~~coastal rock~~ rough limestone
outcrops in grassy
pasture.

---

small tree, sterile.

small tree, ripe fruit
– ~~black~~ purplish black.
vine climbing in trees.

10 m.

shrub 1 m. tall.
flowers white, fruit yellow.

shrub 1.5 m. tall, flowers
white; fruit ~~yellow~~ immature.
all individuals seen
were var. bracteata.
– shrub 1 m. tall;
flowers pale green;
fruit ripening unevenly,
ripe ones black.
– flowers pinkish purple.

July 8 - 2 - 2.5 km. e. of Yoshihara

Well developed littoral forest on beach ridge.

West of this, forest on pitted limestone, Porites very prominent.

A few hundred m. west of this is a lobe of reef with a reef flat about 150 m. wide, & more in places. The reef flat is about level but with an irregular surface with perhaps 1-2 dm relief, covered by a fine mixed algal fur.

The reef margin is almost dead with only a few scattered small corals in crevices, small surge channels and other protected places. The exposed portions of the margin and surface a few m. back of it appear abraded and a dull pinkish gray color. It is not much abraded, though, but covered by a weak growth of a smooth somewh

knobby Porolithon. It is honeycombed by small holes. The Porolithon is actually in thin layers, 1-2 mm., over-lying each other, in places making up the rock, elsewhere on rock of other origin. The whole, when broken, is seen to be riddled with boring mollusks and Sipunculids. In a cavity was found a small gray, very active spider. The cavity was apparently silk-lined. This is at least 1.5, probably 2 m. below high tide level.

There is very little sand on this reef flat, only such as is held by the algal fur.

The honey-comb effect, really not honey-combed but deeply channelled with holes 2-3 cm. in diameter which are sinuous and go parallel with the plane of the reef surface then curve irregularly downward, appears to be due to a small lavender & purple excentric echinoid, roughly oblong in shape. These could be seen in the bottoms of many of the holes.

July 8 – 2 km. e. of Yoshihara
In dense broad strip of littoral forest

37912 Boehmeria formosana Hayata
6 common along path
2 13 Psychotria
common in undergrowth
1 14 (~~ascl~~ep.) Parsonsia ? helicandra H&A. ~~cumingiana A DC.~~
common near seaward edge along trail
7. 15 Maesa tenera Mez
common in undergrowth

---

20 m.

13 shrub 1 m. tall, fruit immature.
14 extensive twining vine; flowers yellow-green.

15 shrub 2 m. tall, very slender; fruit immature.

July 10 – Kobama Jima
from sea on east ~~or~~ ~~southeast~~ side the island looks grassy with rather sparse woods scattered here and there. The woods on the ~~west~~ east peninsula seem to be an open growth of pine. On the ~~east~~ north end are low bluffs with wind-sheared woods

The two high hills are grassy with sparse brush. On their flanks are areas of bright green Imperata. Much of this in the low center part, also.

Patches of pine are conspicuous at middle altitudes on ~~eastern~~ northern part of island, as well as in the western peninsula.

along coast a conspicuous barrier of littoral scrub or forest attenuating out along the base of the line of bluffs on the ~~east~~ north end.

Paleozoic schist and quartz schist exposed near landing. Covered with Pandanus thicket with more and more Ficus inland.

up a bit there is post-Miocene limestone. covered with Pandanus, Cycas, Melanolepis, Ficus, etc. Musa, Murraya, Arenga.
Between the limestone outcrops is a fine gray-brown soil this is partly cultivated – sugar cane, sweet potatoes, – partly very weedy.
a few small paddy fields.

Slope of highest hill grassy with abundant Pandanus thickets.
At base abundant fragments of schist.

There are 3 hills of a shale or rotten schist, all about the same altitude. all grassy on top but top surrounded

List of plants seen on island!

Casuarina
Leucaena glauca
Pandanus
Acacia confusa
Hibiscus tiliaceus
Cycas
Imperata
Premna
Calophyllum
Miscanthus floridulus
Psidium guajava
Lygodium flexuosum
Evolvulus
Vernonia cinerea
Emilia sonchifolia
Alocasia
Murraya
Ficus retusa
Ficus wightiana
Alpinia speciosa
Ampelopsis
Melanolepis
Melia
Clematis
Boehmeria nivea
Eupatorium
Arenga
Cardiospermum
Gynura
Artemisia vulgaris
Artemisia

Diospyros ferrea
Pinus luchuensis
Oryza sativa
Blumea (both spp.)
Mussaenda
Ficus erecta
~~Pittosporum~~
Bidens pilosa
Pueraria
Ardisia
Machilus
Scaevola sericea
Pipturus
Dianella ensifolia
~~Ficus retu~~

by thickets (on east hill only) of Pandanus, Alpinia, Machilus, Miscanthus, Psidium, Cycas, Alocasia, Eurya etc.

On the side facing Iriomote is a broad terrace, almost all under cultivation. The village is on the east side of this. Between the village and the sea is a lower terrace, also under cultivation.

Cultivation seems mostly cane and sweet potatoes.

Small clumps of forest scattered here and there, pine, broad-leaf, or mixed.

The terrace north of the 3 hills, also, is largely cultivated and has a scattering of wet paddy fields.

The foothills back of this terrace are grassy with Pandanus thickets.

Pandanus thickets are the most widespread feature of the vegetation

of this island. Even the pine groves have an understory of Pandanus scrub.

The little flat island north of Kobama has Imperata with scattered Pandanus thickets.

Near the landing the rock is schist but cut by dikes of volcanic material. West of the landing along the shore, is an exposure of another kind of volcanic rock.

July 10 Taketomi

Rubus zoichigo (J) ?
Erythrina - deiko

The south end of the island is a scabby area mostly in Imperata, outcrops of limestone, the large ones with thickets of Cycas, Acacia, Toddalia and various shrubs — Morus, Musa, Premna, Miscanthus etc. occasional field cultivated — mung beans, cane, etc. Most have been cultivated in the past but abandoned. Many stone walls in poor repair. Perhaps 10% of land cultivated now. Limestone outcrops everywhere. The seaward edge surrounded

by concentric belts of Leucaena and littoral forest or scrub.

A small shrine grove in south village has 1 tree each of Ficus ~~[illegible]~~ retusa? Ficus variegata, Pouteria, Machilus, and Garcinia. A pleasant cool spot.

Another near the north end has Garcinia and Hibiscus tiliaceus.

The large conspicuous grove at the north end has a number of enormous old Calophyllum trees, many of the largest Garcinia on the island, great Hernandia, Diospyros, Ficus retusa (one tree at gate).

It is cool, quiet and most impressive inside the grove, while sizzling hot outside.

Along reef from north end to pier are a series of outcrops. First is a series of schist dipping toward the big chert outcrop offshore, a big chert boulder lying on top of this.

Then more schist outcrop ~~beds~~ scattered along the reef, emerging through the present reef flat.

Then a short series of outcropping beds of a conglomerate including paleozoic fragments. Quite variable in texture.

July 10 – Taketomi + Shima

~~village~~ Hazama ~~Haitama~~ Village

37916 Annona squamosa L.
2 cultivated

north end, just east of Mi taki
5 17 Thalassia hemprichii (Ehrenb.)
in sandy pools on reef flat
5 18 Garcinia spicata Hook. f.
in grove around shrine

0 m.
Aschers in Petermann det. C. den Hartog 1969
sterile
2 m.
Tree; fruits green, some exuding yellow latex.

1956 Ryukyu Is.
~~village~~ Hatama Village

37919 Ficus retusa var.
5 in grove around shrine
5 20 Ficus virgata Reinw.
in grove around shrine

Nakasuji,
~~20~~ south central part of
3 21 Solanum verbascifolium L.
edge of cultivated patch
in small thicket
2 22 Erythrina variegata var. orientalis
scattered in waste land
1 23 Achyranthes aspera L
rare in waste land
3 24 Conyza bonariensis
Erigeron bonariensis L
common in recently
abandoned or fallow fields
2 25 Rubus parvifolius var. triphyllus (Thunb.)
common on limestone
outcrops
2 26 (~~Kab.~~) Anisomeles indica (L.) Kuntze
occasional on pockets
of soil in limestone outcrops
3 27 Artemisia capillaris Thunb.
very common on waste land
28 Berchemia lineata DC
common on bare limestone
outcrops

---

20 m. large tree, all leaves small;
fruits deep maroon purple.
— large tree, ~~all leaves~~
~~fru~~ branches drooping
at tips; fruit immature

island
10 m. shrub 2.5 m. high,
↓ fruit immature.

(L.) Merr. Tree 3 m. tall

much branched herb;
flowers greenish.

Nakai stems prostrate to
ascending.

past flowering.

prostrate spreading
scandent shrub
ripe fruit blue-black

1956 Ryukyu Is.

July 10 - Kobama Jima,
Funa Saki

37929 Pandanus
5 forming thickets along beach

3 30 Sphenomeris chinensis (L.) Maxon
abundant on vertical
road cuts

3 31 Melanolepis multiglandulosa
Mallotus moluccanus (L.) M.-A.
common on limestone

3 32 Mallotus japonicus M.-A.
common on limestone

~~3~~

between O Take and
Funa Saki

3 33 Pipturus arborescens (Link) C.B. Rob.
occasional in
thickets on limestone

5 34 Ficus ~~wightiana~~ superba var. japonica Miq.
occasional in thickets
on limestone.

2 35 Cycas revoluta Thunb.
common on limestone

3 36 Digitaria violascens Link
common in cultivated fields,
limestone soil

1 37 ~~(grass)~~ Leptochloa panicea (Retz.) Ohwi
common in cultivated
fields, limestone soil

1 38 ~~(grass)~~ Eriochloa procera (Retz.) C.E. Hubb.
common in cultivated fields,
limestone soil

Kobama I.

3-5 m.

shrubby tree 3 m. tall,
fruit orange-red.

fronds appressed to
banks [likely that this small less finely divided, coriaceous form deserves some sort of name. It is probably the littoral of ? t.
C.V. Morton]

shrub 2.5 m. tall.

30-60 m.

shrub 2-3 m. tall

shrub 1.5 m. tall,
~~fertile~~ carpels forming
a globose mass,
hiding the seeds within.

A. det Chase

on A. Chase

A. on Chase

1956 Ryukyu Is.

3 7939 Phyllanthus simplex
5 local in edges of cultivated fields

3 40 Euphorbia hirta L. ck
common weed in cultivated fields

3 41 Ficus septica Burm. f.
common in thickets

3 42 Ardisia sieboldii Miq.
common in thickets

5 43 Vitex trifolia var. simplicifolia Cham.
common around edges of thickets

1 44 (lab.) Mosla grosseserrata Maxim.
rare in cultivated field

2 45 Fimbristylis
grassy edges of rice fields and trail sides

3 46 Cyperus iria L. ck J. H. Kern
grassy ~~trail~~ sides

2 47 Uraria crinita Desv.
rare on grassy trail sides

4 48 ~~Andropogon~~ Hemarthria japonica
rare along grassy trails

2 49 (~~grass~~) ~~Andropogon intermedius R. Br.?~~
rare on edges of rice fields
Bothriochloa glabra (Roxb.) A. Camus det A. Chase
~~same [illegible]~~

4 50 Diospyros ferrea
around tombs on limestone outcrop

5 51 (~~stand.~~) Melochia corchorifolia L.
weed in cultivated fields

Kobama I.

small tree; fruit immature, depressed globose, ribbed.

— shrub 2 m. tall; flowers white

— shrub 1 m. tall; flowers blue lavender

flowers rose-purple

det A. Chase
(Hack.) Stapf
A. Chase

caespitose

tree 5 m. tall, compact, fruit yellowish.

flowers purplish pink

1956 Ryukyu Is

37952 Emilia sonchifolia (L.) DC.
2 weeds in cultivated fields.

same - Funa Saki
on metamorphic rocks
~~53~~ in full sun.
4 53 Portulaca oleracea L. ?
common
4 54 Phyllanthus urinaria L.
common

same - O Take
hill of soft schist
4 55 Lygodium flexuosum
common in thickets
2 56 Ficus erecta var. beecheyana (H. & A.) King
occasional in thickets
on slopes
3 57 Dianella ensifolia
common on slopes
3 58 Eurya
common on slopes
3 59 Carmona retusa
Ehretia microphylla Lam.
common in thickets on slopes
3 60 Ficus erecta Thunb.
common in low thickets
around summit
1 61 Ardisia sieboldii Miq.
~~in low~~ around ~~on~~ summit
in low thicket
4 62 Machilus ? ~~M.~~ thunbergii S. & Z.
on summit, common
5 63 Mussaenda parviflora Miq.
in thickets around summit

Kohama I.

3 m.

plant fleshy, bronzed;
petals deeply bifid,
5 mm. long, yellow.

L. microstachyum var. glabrescens Nakai
det. E. H. Walker
75 m. fronds extensively
twining

flowers light blue

shrub 1 m. tall;
ripe fruit black
arching bush; ripe
fruit orange-red
98 m. shrub 1 m. tall, ripe
fruit dark purple.

shrub 2 m. tall,
flowers white.

shrub 2 m tall;
sterile
shrub 1.5 m. tall,
flowers with yellow
corolla, white enlarged sepal.

1956 Ryukyu Is. Kobama I.

37964 Eupatorium formosanum var. quasitripartitum (Hayata) Kitam.
common on grassy summit
erect herb 0.8 m. tall, flowers whitish, with honey-like odor.

2 65 ~~Vincetoxicum~~ Cynanchum liukiuense Warb.
tangled in thickets
on slopes
flowers brownish.

2 66 Psychotria serpens L. =
on slopes
scandent shrub.

2 67 Fimbristylis monostachyos (L.) Hassk.
common along trail
in grass
caespitose

1956 Ryukyu Is.

July 12 - 2 km. north of Ishigaki City

grassy abandoned paddy field

37968 Fimbristylis dichotoma (L.) Vahl
5 common

1 49 (~~grass~~) Eriochloa procera (Retz.) C.E. Hubb.
occasional

1 70 Ischaemum crassipes (Steud.) Thell.
rare around edges

5 71 Aeschynomene indica L.
dominant locally in

ISHIGAKI ISLAND.

60 m

OK J. H. Kern

A. Chase

[illegible] A. Chase

erect much-branched herb to 1 m. tall; flowers greenish yellow, marked outside with brown.

July 14
north of Banna Dake

(210)
(photo
940-42)

Scrub forest about 4-5 m. high. Composition:

Premna obtusifolia
Mallotus japonicus
Glochidion hongkongense.
Wendlandia
Evodia
Maesa
Elaeagnus
Glochidion lanceolatum
Eugenia buxifolia
Eugenia jambos
Ardisia
Psychotria liukiuensis
Diospyros maritima
Schefflera
Lasianthus 2 spp.
Arenga
Barringtonia racemosa
Ficus benguetensis
Rhus succedanea
Lasiandra
Angiopteris
Bridelia
Miscanthus
Flagellaria
Smilax

Tamarija
Cyathea
quercus

Coppice form, several ferns common on ground Barringtonia and Eugenia jambos particularly

along streams.
Island rather flat with ravines cut in it to about 2 m. depth. Great angular boulders in ravines mostly diorite. underlain by soft conglomerate and soft sandstone.

July 14 — just above Kainan V.

(211)
(Photo
940-43)

Ravine forest - very irregular - composition:

Mallotus japonicus
Ficus sp. (ribbed fruit)
Bischofia javanica
Boehmeria ?,
Ardisia 2 spp.
Flagellaria
Smilax
Piper
Ficus sp.
Angiopteris
Arenga
Psychotria
Caesalpinia
Pterocarpus
Ficus (small lfd. virgata)
Ficus sp.
Cyathea
Mallotus paniculatus

Maesa
Mussaenda
Rhus succadanea
Schefflera
Ficus retusa
Morus
Glochidion hongkongense
Evodia
Celtis?
Cinnamomum camphora
Pouteria
Crataeva
Clematis
Mallotus philippinensis
Clerodendrum trichotomum
Machilus
Garcinia spicata
Trema
Ficus virgata
Melanolepis

July 14 - just north of Kainan Village upper Miyara Valley thickly wooded ravines

37972 Pisonia umbellifera (Forst.) Seem.
3

5 73 Ficus konishii Hayata
common

Oreocnide pedunculata (Shirai) Masam.
5 74 ~~Boehmeria~~
common around edges

70 m.

small tree, fruit immature

large tree without aerial roots, fruit clusters on ~~[illegible]~~ large branches, fruit almost spherical, green.

shrub 3 ~~2.5~~ m. tall, very bushy

1956 Ryukyu Is

37975 Cinnamomum camphora (L.) Nees & Eberm.
3 occasional

4 76 Canavalia turgida Grah. Graham ?ok
occasional

2 77 Solanum aculeatissimum Jacq. ok
rare along trail

9 78 Ficus benguetensis Merr. (= F. miyagii Koidz.)
common

July 14 – 3 km. east of
Nagura 35 m.
in dense coppice thicket

3 79 Miscanthus floridulus (Labill.) Warb. ok
common, this from
edge of thicket.

7 80 ~~Randia~~ ? Tarenna gyokushinkwa Ohwi
rare in shrub layer

3 81 ~~asplenium~~, Athyrium lanceum (Thunb.) Milde
terrestrial, on roadside bank

2 82 Elaeocarpus japonicus S. & Z.
rare along stream

3 83 Ardisia quinquegona Bl.
occasional

5 ~~84~~ 84 Saurauia tristyla var. oldhami (Hemsl.) Finet & Gagnep.
common along stream

Glochidion

5 85 Bridelia
~~common~~ occasional.

37985a → Ottelia alismoides (L.) Pers. det. C. den Hartog 1969

---

shrub 2.5 m. tall, aromatic
when broken; sterile;
leaves glaucous beneath.

— extensive twining vine;
flowers ~~[illegible]~~ rose pink;
pods inflated.

— flower white; fruit
globose, scarlet.

— small tree, 4 m. tall,
figs globose, dark green, not ribbed.

canes 2 m. tall, curved;
flowering out of season

shrub 1 m. tall,
flowers white, corolla
lobes somewhat twisted.

small tree, sterile.

slender shrub 1.5 m. tall, fruit
more or less pentagonal,
depressed globose.

— spreading tree; fruits
borne on stems, white
and fleshy when ripe.

— small tree. fruit greenish.

1956 Ryukyu Is.

July 15 YCAT compound
2 km. west of) Naga kabi ~~Ishigaki city~~
planted ~~[illegible]~~ around buildings
and in gardens.

37986 Casuarina equisetifolia L.
5 widely planted on island
3 87 Gaillardia ~~picta~~
in garden G. pulchella Foug.
3 88 Acalypha amentacea
var. wilkesiana (M.-A.)
2
3 89 Codiaeum variegatum Bl.

July 15 — Nagura
(212) patch of ~~Hanguana (?)~~ Miscanthus condensatus
(Photo in small paddy
940-39) field ~~at mouth~~ in
small stream.
The plant forms a
solid stand about 2 m.
tall in soupy mud.
It is light green.
all sterile at this time.
spreads by hollow
septate rhizomes.

(213) Northwest of this is a
stretch of marsh
dominated by Panicum
repens, gradually
changing northward

2 m.
↓
Trees 5 m. tall, (two trees
represented in specimen)
much branched herb,
flowers red and yellow
Shrub 2 m. tall, leaves
variegated, red, yellow
and green.
shrub 1.2 m tall, leaves
dark maroon-purple
and green; sterile.

to Typha and Isachne
with some Panicum
and a scattering
of 3 sp. Cyperus, Scirpus,
~~At~~ Cladium, Fuirena,
Fimbristylis, etc.
The soil seems to
be a sticky muck.
very little structure
preserved.
Locally are patches of
reeds. On higher ground
where it is almost dry
Imperata and Miscanthus
with Artemisia take over.

July 15 1 km.
north-west of Nagura

(215)
(photo
440-39)

G large area of
Mariscus marsh
with some patches
of reeds.

July 15 - 1 km. northwest of
Nagura
in paddy field, already
harvested

37985a Ottelia ? O. alismoides Pers.
5 abundant, submerged
except flower.

2 86a Spirodela polyrhiza (L.) Schleid.
common, floating

2 87a Azolla imbricata (Roxb.) Nakai
~~ocean~~ common, floating

July 15 - 1.5 km. s.w. of
Nagura
in marsh, growing
in deep stiff mud.

7 88a ~~Eupatorium~~ Adenostemma lavenia (L.) Kuntze
common locally

2 89a Typha angustifolia L.
abundant T. "angustata Bory & Chaub."

4 90 Fimbristylis
common

5 91 Isachne globosa (Thunb.) Kuntze
abundant

5 92 Scirpus validus Vahl
local

5 m.

flower pinkish white,
emerged.

mixed with Azolla imbricata

det.
Dr. Vol

1 m.

flowers white.

rhizome deeply buried

Chaub."

— lower case

A. OK
Chase

small ~~tufts~~ mats of
erect stems, leaves at
right angles to stem.

stems erect subterete, soft
rhizome orange red, deeply buried.

1956 Ryukyu Is.

37993 Cyperus globosus All. Dt J. H. Kern
5 common locally

5 94 ~~Rhynchospora~~ Schoenus falcatus R. Br.
common on sandy edges of marsh

July 15 – 2 km. s.w. of Nagura

1 95 (~~Hemarthria [illegible]~~ Miscanthus condensatus Hack.
large dense colony in ~~the~~ paddy field in deep mud.

July 16 – ~~[illegible]~~ 2 km. ~~[illegible]~~ 10-20° e. of north of Ibaruma

Lower slopes are mostly cleared and in Imperata, Pteris, etc.

(214) Lower forest is Diospyros, Ardisia
photo 843-182 Morus, Ficus, Daphniphyllum, Machilus? Diospyros ferrea
Rhus, Styrax, etc
Small trees 4-5 m. tall up to 15 cm. dbh
Thin undergrowth, mostly Psychotria Eugenia, Ilex? Eurya. Schima.

(215) Up the slope the stature becomes greater perhaps 5-8 m. Composition does not change much. A few enormous old

---

densely caespitose.

2 m.
det. A. Chase

2 m. tall; sterile.

round topped spreading pines on ~~slopes~~ ridges.
Ferns and Ligularia fairly common. Ferns mostly Pteris and the brown hairy Dryopteris.
Undergrowth thicker and more diverse here.

Some vines, Ilex, etc. throughout, but not many.

(216) Some Garcinia, Mallotus philippinensis, Elaeagnus, Dendropanax, Ficus retusa. A few enormous Machilus (6-7 dm. dbh.), on higher ridges, ~~first Quercus not~~

~~far from top.~~
Large banyans
F. virgata & F. retusa.
~~Fictus~~ Croton
becomes abundant in
(217) undergrowth, and
near top, Tectaria
in fern layer.
No epiphytes
except a very few
Asplenium nidus.
A little Elaeocarpus
on top but no Quercus.
Some Mallotus philippinensis

Along the crest and
(218) where not cleared, down
some way on the east
slope is a dense scrub
3-4 m. tall of Distylium,
Glochidion, some Rhus,
Mallotus, Ficus, Ardisia
Premna, Elaeagnus, Cinnamomum
Eugenia, Viburnum, etc.
The cleared east slope
(219) is largely Miscanthus,
some of it 2-3 m. tall
in sheltered spots.

In the scrub is little
or no ground cover
and little undergrowth
but trees are spaced
0.5-1 m. apart and

penetration is slow.

Going down ravine
(220) on ~~east~~ west side
the first grade
is very gentle
and the bottom broad.
Then a cirque-like
springy place,
then rather steep
grade and narrow
rocky bottom.
Trees here are
large, up to 15 m.
Some enormous
buttressed Ficus
of a cauliflorous
species (like 37977).
Ferns profuse
and luxuriant,
many species, all
terrestrial. Some
Arenga.
Gardenia is common
A few large Melanolepis.
Other species more or less
as on slopes and ridges.
(221) Ficus (ribbed) common in
lower half. Premna.
Livistona, only very
young trees, scattered
sparingly generally
on this mountain.
Water only in upper part of ravine

1956 Ryukyu Is.

(222) July 16 – 3 km. 15° e. of n. of Ibaruma
On a knoll toward
sea from mountains
is a grove of large
Livistona with
an undergrowth of
Cycas and Pandanus
The palms are along
the landward slopes
of the knoll. up the
slopes they are replaced
by a forest of Ficus
Macaranga, Ardisia,
Liquidambar, Machilus
Diospyros, etc.
with a thick shrub
layer largely of
young Livistona,
Top of knoll has
brush, Miscanthus
and some Livistona
a few Pines.
Psychotria general.
Many palms have
been cut, presumably
for the young leaves, as bases
of petioles are abundant

July 16 – 2.5 km. s. of
Hirakubo
ravine on steep
slope – has forest
up to 15 m. tall, a
few big trees,
mostly Ficus,
with Diospyros,
Macaranga, Ardisia

thigh undergrowth
of Psychotria, Arenga,

Ferns abundant

Ridge s. of this
has a scrubbier
dryer forest to
8 m. tall with
Diospyros ferrea,
Ardisia, Ficus,
D. maritima, Arenga,
Rhus, Lauraceae, Garcinia,
Camellia, Arenga etc.
few ferns
some undergrowth
of Croton, Psychotria,
Arenga etc.
But no Quercus & possibly
150–175 m.

1956 Ryukyu Is.

back of Kida Sabi,

July 16 – 3 km. 15° e. of n. of

~~[illegible]~~ Ibaruma

37996. Livistona chinensis [illegible]

2 abundant on low knoll on coastal terrace

~~July 17 – 2.5 km. n.e. of~~

~~[illegible]~~ n.e. base of Yabaga Dake

July 16 – 7 km. 15° e. of north of Ibaruma

in thicket in ravine.

6 97 Flagellaria indica common

3 98 Ardisia sieboldii Miq. common

5 99 Clerodendrum trichotomum Thunb. common

41 m. tree with straight trunk 4 m. high, lower part smooth, upper 1 m. showing rather close set leaf scars, trunk with a distinct "bark" about 1 cm. thick, leaves with narrow free tips of segments drooping. fruit immature but possibly about full size, ellipsoidal. (most trees in grove not fruiting) (leaf-bases with stipules not from same tree – they are from young leaves harvested for making rain-coats).

40 m.

– vine tangled in trees, fruit immature.

– small tree, flowers white, fruit green, round.

– small tree, corolla lobes white, tube crimson.

1956 Ryukyu Is.
July 16 - n. slopes of Yaboga Dake 20-30° ~~w~~ e. of n. of Ibaruma
in bottom of ravine on steep slope

37000 Trema orientalis Bl.
7 rare

1 01 ~~Asplenium~~ Athyrium lanceum (Thunb.) Milde
common on rocks

2 02 Asplenium unilaterale Lam.
common on rocks

2 03 Hoya carnosa
common on rocks and fallen tree trunks

same - a summit ridge

1 04 Polygala japonica Houtt.
rare on rocks in full sun

1 05 Ligularia tussilaginea (Burm.f.) Mak. : ~~Farfugium japonicum~~ (L.f.) Kitam.
common at edge of scrub forest

4 06 Viburnum awabuki K. Koch
common in scrub forest

same - on high densely wooded ridge

10 07 Elaeocarpus
occasional

3 08 Callicarpa iriomotensis Masam.
occasional in undergrowth

same - a steep densely wooded slope

2 09 ~~Daphniphyllum~~ ?
common Distylium racemosum S.&Z.

---

120 m. large open-branched tree 15 m. high; ripe fruit purplish black.

180 m.

180 m.

vine, leaves very thick, flowers ~~white~~, waxy, white with red center to corona.

210 m.

flowers yellow, mostly not flowering.

200 m. tree 10 m. tall, flowers white.

200 m

tree 10 m. high

1956 Ryukyu Is.

38010 ~~lau~~? Daphniphyllum teijsmannii var. iriomotense Hurusawa

~~10~~9 rare

3 11 Ilex

Eurya

rare in undergrowth,

5 12 Diospyros ~~[illegible]~~ maritima Bl.

very common

July 20: s. side Yarabu Pen.

223 (Photo 950-124) Pandanus scrub in ravine.

(224) Terrace with dense Imperata, some admixture of Ischaemum, Eulalia, Osbeckia, Canthanospermum, Rhynchospora rubra, Rosa, Paspalum orbiculare, Setaria, etc. The grass is dense and up to waist deep. A few scattered large spreading pines.

(225) Strip of ravine forest with ~~[illegible]~~ Cerbera, Pandanus, Macaranga, Ficus 2 spp. Bischofia Zanthoxylum ailanthoides

F. wrightiana
Evodia
Carya-like shrub
Schefflera
Melia

The grassy hills here are covered by Miscanthus with scattered pines. The terraces at base with

small tree, fruit green

— shrub 2 m. tall. fruit immature

— tree 10 m. tall, leaves dark green; fruit immature

Imperata. some cultivation

smaller ravines filled with Pandanus. more important ones with ravine forest, very mixed.

The wooded hill, so far as can be seen, seem to have a degraded Ficus forest, much tangled with vines, and with, locally scattered pines.

(224) Ravine forest with
Pandanus
Rhus
Bischofia
Macaranga
Melia

Maesa
Pouteria
Mallotus japonicus
Ficus virgata
Symplocos?
Trema
Pithecellobium?
Annon.? ~~prickly~~ spiny trunk
Ardisia
Diospyros maritima
Evodia
opp. lvd. serrat. trifoliat
shrub.
Mallotus paniculatus
Garcinia
Cerbera
Ehretia
"Breynia"
Machilus
Ficus retusa
Raphiolepis
Distylium
Ficus 'cauliflorous
Schefflera

July 20 - Sakieda, 1 km. s.e. of Yarabu Daké, s. side of Yarabu Peninsula in wooded ravine

38013 Ardisia sieboldii Miq.
5 common

3 14 Vitis lanata Roxb.
occasional

7 15 Turpinia ternata Nakai
common

40 m.

shrub 3 m. tall,
flowers pinkish white

— vine, climbing in thicket

— small tree 6 m. tall
fruit immature.

1956 Ryukyu Is.

38016 ~~Pithecellobium~~ ? Albizzia lebbek (Willd.) Benth.
2 common

same - on open grassy terrace

5 17 Hypericum japonicum Thunb.
common locally

3 18 Setaria lutescens (Weig.) Hubb.
common generally

2 19 ~~Sorghastrum~~ Sorghum nitidum (Vahl) Pers.
common

2 20 Mitrasacme pygmaea R. Br.
very local on bare soil

1 21 Alysicarpus vaginalis (L.) DC.
occasional

1 22 Rhynchospora rubra (Lour.) Makino
on bare roadside

3 23 Fimbristylis
on bare roadside

4 24 ~~(gram)~~ Bothriochloa glabra (Roxb.) A. Camus
occasional in disturbed places

~~25 Scirpus~~
same - in moist ground below spring

5 25 Scirpus Lipocarpha senegalensis (Lam.) Dandy
rare

7 26 Fimbristylis miliacea (L.) Vahl det J. H. Kern
common

2 27 ~~(Lab.)~~ Polygala glaucoides L. var. ?
rare

2 28 Cyperus globosus All.
occasional

2 29 Fimbristylis
rare

---

tree, buds very young.

4 pm.

det. A. Chase

det. A. Chase

flowers white.

stems trailing

det A. Chase

caespitose

caespitose, blade set perpendicular to sheath.
flowers purple.

1956

Lindernia?

2 38030 ~~Torenia~~
occasional

1 31 (~~grass~~) Sacciolepis oryzetorum (Makino) Honda
rare

just south of
July 2[illegible] - Ogan Zaki, n.w.
point of Yarabu Peninsula
on rough limestone rocks

8 32 Phyllanthus
edge of low cliff just above
high tide level

2 33 ?~~[illegible]~~? Philoxerus wrightii
common at ~~a~~ and below high
tide level

3 34 Limonium arbusculum (Maxim.) or
common at and below high tide level

~~35 Fimbristylis cymosa~~

5 35 Fimbristylis cymosa
(also on volcanic rocks)

36 Sedum uniflorum H.&A. det. cf R. Moran
very local, just above
high tide level on detached
boulder

~~Sunai~~, near Ogan Zaki
~~sand~~ on sand ridge

37 Canavalia turgida Graham ?
common

July 2[illegible] - Ogan Zaki,
n.w. point of Yarabu Peninsula
on steep sloping volcanic
tuff in open very low
vegetation, above sea.

(over)

---

det. A. Chase

1-2 m.

shrub, m. tall, leaves
not distichous.

Hook. f

forming a dense mat
clinging close to rock.

Makino

depressed dwarf shrub,
leaves sub-fleshy, flowers
lavender.

OK J.H. Kern

caespitose

plant pale glaucous
green, fleshy.

2 m.

prostrate, creeping;
flowers pink.

1950 – Ryukyu Is.

5 38038 (~~grass~~) Bothriochloa kwashotensis (Hayata) Ohwi [illegible] – 10 m.
very abundant on steep slope

5 39 (~~legume~~) Galactia tashiroi Maxim. – 5 m.
very common

1 40 Pteris fauriei Hieron. – 60 m.
in crevice in high cliff

4 41 Cocculus trilobus (Thunb.) DC. – 60 m.
local on high crest

3 42 Hedyotis albido-punctata – 60 m.
common generally
Oldenlandia

July 2[illegible] – summit of
Yarabu Dake – 214 m.
~~4~~ in sclerophyll scrub forest on
volcanic rock

5 43 Mallotus japonicus M.-A. or
edge of ~~open~~ small clearing

6 44 ~~Daphniphyllum~~ Distylium racemosum S. & Z.
common

2 45 Diospyros ferrea var. buxifolia (Rottb.) Bakh.
very common

3 46 Raphiolepis liukiuensis (Koidz.) Naka
common

6 47 Daphniphyllum teijsmannii var. oldhami) Hurusawa
occasional

5 48 (~~[illegible]~~) Michelia compressa (Maxim.) Sarg
common

July 2[illegible] – ridge ~~[illegible]~~ n.e. of
Yarabu Dake
on densely wooded broad
ridge

forming a loose mat.

prostrate, forming
loose mats.

twining in low scrub,
flowers white.

prostrate, long plants
in shade of rocks,
short ones in full sun;
flowers white.

shrub 2 m. tall.

shrub 2 m. tall

small tree 3 m. tall;
~~[illegible]~~ fruit immature
(yellow when ripe).

shrub 2 m. tall; veins pellucid
fruit immature.

shrub 2 m. tall; fruit
immature

shrub 2 m tall,
fruit green.

1956 Ryukyu Is.

Tricalysia dubia (Lindl.) Ohwi

38049 Diplospora
2 occasional

9 50 Neolitsea ohbana Koidz. det. C.K. Allen
occasional

4 51 Podocarpus macrophyllus
occasional (Thunb.) D. Don

1 52 Ilex maximowicziana Loes. ?
occasional

5 53 Ardisia ~~pentagona ?~~
occasional quinquegona Bl.

3 54 Callicarpa iriomotensis Masam.
occasional

4 55 Cinnamomum ~~[illegible]~~ japonicum Sieb.
occasional

4 56 Ficus ampelas Burm. f.
common at lower levels

1 57 Pleioblastus gramineus (Bean) Nakai
abundant at lower levels, forming understory in rather dry forest.

July 24 – north side of Yarabu Peninsula in lowland thickets

3 58 Ficus septica
common

3 59 Sambucus
common

---

160 m. Tree; fruit immature.

↓

tree 8 m. tall, 10 cm. dbh;
— fruit immature.
small tree 15 m. tall,
sterile.
— ~~[illegible]~~ shrub, fruit immature,
insect galls conspicuous.
— shrub 1.5 m. tall; fruit
immature, depressed
globose, slightly pentagonal.
— shrub 2 m. tall,
fruit immature.
— small tree, sterile;
leaves both opposite and
alternate.
shrub or small tree,
fruit yellowish.
100 m. — erect, stems green, in
det. F.A. McClure small ~~[illegible]~~ clumps from
rhizome.

20 m.

small tree, fruit depressed
— globose, ribbed, immature.
shrub 2 m. tall;
flowers white, fruit
bright red.

July 21 – north side of
Yarabu Peninsula

Lower slopes have
(227) masses of rough post-
(Photo Miocene limestone with
950-68) openings and thickets.
Above the last limestone
(228) the slopes are wooded
and the forest is more or less
typical Diospyros-Ardisia
forest. In addition to
the Diospyros maritima
and Ardisia there are
Diospyros ferrea, Ficus,
Dendropanax, Elaeocarpus
japonicus, Schefflera octophylla,
and other species.

At the top of the slope
(229) is a more or less level
broad-topped ridge, well
wooded with a forest
about 15 m. tall of
Ficus retusa, the
cauliflorous Ficus, Cinnamomum sp
and Dendropanax as the
commonest trees.

Where this ridge begins to
(230) narrow and rise Quercus
(Photo cuspidata comes in and
950-176) becomes fairly abundant.
Podocarpus is a common
understory tree, here
reaching 5 m. tall.

From here on ~~western~~
southward the forest
becomes lower in places,
perhaps 10 m., with
Quercus, Elaeocarpus,
Dendropanax, Diospyros
ferrea, Ilex?, Diplospora?,
Ardisia, etc. For some
distance there are very
few ferns. The undergrowth
is of Psychotria, Eugenia,
and, well up, Croton.
There is a very little
Freycinetia, no epiphytes.

Along the ridge toward
Yarabu Dake are signs
of disturbance in the form
of such plants as Trema,
Mallotus paniculatus, etc.

In places on the slopes
of ~~Y~~ Yarabu Dake itself
the forest is higher,
more luxuriant, with
considerable ferns on
the ground.

The actual peak is a
knob of volcanic breccia,
~~somewhat~~ disturbed by
an installation of some
sort put up by the Japanese
during the war. Here are
a few pioneers such as
Mallotus japonicus. This
knob is surrounded by

a scrub forest of Diospyros ferrea, Ilex, Myrsine?, Premna, Ficus virgata, "Breynia", Euonymus?, Firmiana?, Rhus succedanea, Raphiolepis, Pouteria, Camellia, Arenga, Daphniphyllum, Garcinia, Ficus retusa, Dendropanax, Podocarpus etc. This is dense and only 3-5 m. high. The rock surface under it has Pyrrosia, Peperomia, etc. The Peperomia is flaccid and not very fleshy, has no spikes. Probably result of drought.

From here the high country, of broad ridges at about the same height, seems largely covered with oak forest, if the large spreading gray-green trees which cover up to 60% of the area are oak, as is probable.

Eastward the oak seems less prominent and the large rounded eastern peak seems not to have any.

Garcinia seems scattered through most of the forest seen on this mountain mass.

Going down the main westward gulch from Yarabu Dake the oak very soon disappears, leaving a Diospyros-Ardisia forest with more and more Ficus lower down. The gulch is wet and ferns are luxuriant.

The west coast is lined with bluffs of post-Miocene limestone with the usual forest, Limonium, Hedyotis, Sedum, Fimbristylis, Illecebrum(?) common at about high tide level. On some of the low cliffs are fair sized Pemphis trees (3-4 m.)

Ogan Zaki is the n.w. point, is of bedded, seaward dipping brown and green tuffs. The seaward parts are bare of vegetation. Between tides they are conspicuously pitted by sea urchins.

The flora is much poorer than that of corresponding limestone strand. The only plants seen common to both are Scaevola, Pouteria, Vitex, Hedyotis, Zoysia tenuifolia and Fimbristylis.

The vegetation on seaward steep slopes & bluffs is of patches of low Scaevola, low Pandanus scrub, Miscanthus, and a low mixture of Fimbristylis, Zoysia 2 spp., Indigofera liukiuensis, a prostrate pea, Hedyotis albidopunctatis and a soft grass.

On the ridge summit is a low scrub of Pouteria and Scaevola, with Cocculus. In sheltered places are dense patches of Zephyranthes. The north cliffs and offshore rocks are entirely bare of vegetation.

(232)
(Photo
750-70)

1956

July 21 – Inota
2 grassy patches south of s. part of Inota are Miscanthus.
2 patches north of n. part are Imperata. with some Miscanthus on w. slope over road.
Wide belt of littoral forest in front of Inota and also in front of village just north of Inota.
Many patches of forest on lower slopes of mts. being cleared for pineapples, all along here.
North of village north of Inota the steeper grassy slopes are Miscanthus the lower gentler ones are Imperata.

Wooded slopes across bay from Ibaruma – Looks like a much degraded phase of Diospyros – Ardisia forest with Pouteria unusually common.
Probably has suffered a light burning judging from number of half-dead trees.

Trees seen in hasty examination

Diospyros maritima
Ardisia
Pouteria ferruginea
Raphiolepis
Ficus – ribbed fruit.
Garcinia spicata
Rhus
Fraxinus
Ficus retusa
Neolitsea
Opp. lvd pinn. comp. with follicles,
alt. " " " like Canys
Ficus – cauliflorous
Elaeocarpus japonicus
Arenga
Ficus sp. (subcordate)
Trema
Wendlandia
Pinus luchuensis
Diatylium
Diospyros ferrea – large
Ficus virgata (small lf.)
Quercus cuspidata
scattered ~~[illegible]~~) large trees
Cerbera
Mallotus paniculatus
Ficus (dark fruit)
Launaea
Mallotus philippinensis
Morus

This forest may be a degraded oak forest, or the oaks may be just sporadic this low. This altitude, that of the highest part of the road, would seem to be about the present lowest extreme of the oak forest.

The few areas of grass here are Imperata, but to the south, where there is a secondary scrubby mixture there is Miscanthus in openings.

Nosoko area has remnants of a tall Ficus forest along streams and even on post-miocene limestone.

South of Nosoko a large mangrove swamp has mainly Rhizophora about 3-4 m. tall with around edges some Bruguiera and Excoecaria Thespesia + Pandanus + Scaevola

1956 Ryukyu Is.

July 22 1 km. s.w. of
Nosoko-Ishi Saki

38060 Symplocos kotoensis Hayata
#8 rare in degraded forest
on steep slope

July 22 1 km. s. of Nosoko
on Fukido gawa

6 61 Bischofia javanica Bl.
in roadside thicket

4 62 Excoecaria agallocha L.
common in edge of mangrove swamp

5 63 Thespesia populnea (L.) Sol. ex Correa
common in edge of mangrove
swamp

July 22 - near waterfall
1 km. s.w. of Yonohara

6 64 Mallotus paniculatus (Lam.)
common in roadside
thickets

7 tree 6 m. tall, fruits
immature.

5 m. small tree; fruit
brown.

O. m. small tree 5 m. tall;
lactiferous.

O m. small tree 4 m. tall,
flowers closed in
afternoon, reddish.
(note involucral bracts)

of Ara Kawa,

M.-A. small tree 5 m. tall.
5 m.

July 23 –

(233) (Photo 950-110) Low scrubby forest on highest point on schist ridge – ~~[illegible]~~ Quercus, much Ardisia, some Dendropanax, Lauraceae, etc.

Ferns rather abundant, some epiphytes – orchids, etc.

Ground cover of ferns and several herbs, seedlings, etc. Alpinia

Undergrowth thin Psychotria, Rhododendron (?) + several other shrubs + saplings.

(234) Main divide – scrub forest about 6 m. tall, occasional taller trees

Ficus virgata
Pouteria
Dendropanax
Lauraceae – several
Viburnum
Ficus retusa Small lfd. shrub
Schefflera
Cinnamomum
Ardisia
Styrax
Camellia Podocarpus

The upper slopes are strongly wind-sheared, and with conspicuous grooves 6–8 m. apart. These grooves are doubtless due to wind, as there is absolutely nothing to correspond with them below the canopy.

Tangled with Freycinetia and some Smilax. Schefflera odorata Thin undergrowth of various shrubs incl. Sarcandra Psychotria, Neolitsea? etc.

Little or no Quercus.

Spacing of trees 1–3 m. Canopy fairly complete.

Ground cover of ferns, rather sparse.

This ridge rather broad and flat topped.

At the edges the scrub is much more depressed from wind shearing. Much more densely tangled with Freycinetia. Grooves very prominent here.

Ground cover of Ligularia, etc.

(to p. 168)

July 23 –
~~near~~ of Tomino
lowland thickets and
(737) marshy ground

4 38065 Coix lachrima-jobi L.
lacryma
rare in open wet ground

6 66 Barringtonia racemosa (L.) Bl.
common along tidal stream

2 67 Callicarpa japonica var. luxurians Rehd. det. H.N. Moldenke
on rough limestone

5 68 Antidesma pentandrum (var. barbatum (Presl)
on rough limestone

3 69 Artemisia vulgaris L.
common on road fill

7 70 Arenga tremula (Blanco) Becc.
common on rough limestone
A. engleri Becc. det H.E. Moore

3 71 Ficus virgata Reinw. ok
common on rough limestone

1 72 Terminalia catappa L.
~~on~~ in thicket on rough
limestone

2 73 Bauhinia japonica Maxim.
climbing in thicket on rough
limestone

---

2 p.m.

A. Chase caespitose, 1 m. tall.

1 m. small tree 6 m. tall,
racemes pendent,
flowers pinkish white,
immature fruit square
in cross section.

4 m. scandent shrub.
flowers whitish.

Merr.) vel aff.) shrub 2 m. tall; fruit
black when ripe,
pleasantly acid.

2 m. aromatic herb 1 m. tall,
branched.

4 m. ok caespitose, stems
2 m. tall, leafy all
the way to base;
upper leaves reduced,
fruiting panicle
somewhat nodding,
ripe fruit bright red,
most of those in cluster
not ripe yet.

small tree, sterile.

6 m. vine

Westward, along ridge forest much higher — wetter luxuriant ferns. several Livistona.

(235) (Photo 950-59) Down the north slope the forest is very wet and luxuriant — filmy ferns and many others. ground orchids and begonias.

At about 150 m. the forest changes — becomes drier and Ficus becomes most abundant, oaks disappear. Arenga becomes very common.

(236) petioles on young plants to 3 m. spiny only at extreme base. Near the bottom in a broad ravine is a grove of Livistona. Bischofia & Macaranga. Some palms very tall, trunk 10 m. Much logging on all of this slope.

Livistona — "kuba" (Ya)

Arenga — "mani" (Y)

237 Lowland forest on limestone — principally Ficus

1956 Ryukyu Is.

July 23 - high slopes of Tak
above Tomino, 1.5 km. w. of
~~Mosoum Take~~ Hora Dake
in steep wet wooded slope

38074 Lasianthus microcarpus Masam.
2
common in undergrowth

3 75 Asplenium unilaterale Lam.
on moist rocks in ravine

~~10~~9 76 Begonia laciniata var. formosana Hayata
in dense shade

~~5~~ 77 Trichomanes auriculatum Bl. det. C. V. Morton
on rocks in dense shade

8 78 orchid) Goodyera rubicunda Lindl. det. L. A. Garay
terrestrial in deep shade

2 79 (rub.) Marsdenia tinctoria (Roxb.) R. Br.
rare

5 80 Polypodium buergerianum Miq.
climbing on tree-trunks

Sarahama Yama
July 23 - main divide
of island, 1-1.5 km. w. of
~~Mosoum Take~~ Hora Dake
broad wooded ridge,
~~on~~ schist soil.

4 81 (~~[illegible]~~f.) Trichosanthes miyagii Hayata
5 82 Ilex integra Thunb.
in dense scrub at top of slope
2 83 Freycinetia formosana Hemsl.
abundant
4 84
common
9 85 Pouteria obovata (R. Br.) Baehni
common

Takama
~~ma~~ Yama

200-300 m.

shrub, fruit immature.

scapes and petioles
fleshy, ascending to
erect, flowers pink.

perianth dull orange,
column pale yellow
vine climbing in tree
flowers white.
rhizome closely appressed
to tree-trunks.

340 m.

38082a Ilex brachypoda

81 woody vine, flowers white
82 shrub 2.5 m. tall;
fruit immature
83 climbing in trees
84 tree 8 m. tall, sterile.
85 tree 6 m. tall, leaves
glaucous beneath; fruit immature.

1956 Ryukyu Is.

38086 Berchemia racemosa S. & Z.
5 rare

July 23 – Basata Yama

(233) in scrubby forest
5 87 Ainsliaea okinawensis Hayata
abundant locally
2 88 ~~(orchid)~~ Gastrochilus japonicus (Makino) Schltr.
rare, epiphytic on Quercus
5 89 Quercus cuspidata Thunb.
common
Castanopsis cuspidata (Thunb.) Schottky

---

vine climbing in trees,
flowers greenish white.

260 m.

flower yellow, red spotted
within, fading red.
tree 10 m. tall, fruit
immature.

1956 Ryukyu Is.

July 24 - Ishigaki Island trip by boat up east coast and around island from Ishigaki City - start 7:30 a.m.

Brown bell-shaped medusae in water in harbor.

Small rock just east of harbor, 200 m. offshore covered by Boerhavia, Lepturus and Ischaemum.

Shore, Ishigaki to ~~Near Ohama~~ covered by dense littoral scrub on very low undercut limestone cliffs. Then a stretch of about 0.4 km. of beach with scrub on beach ridge. Then perhaps 0.5 km. of similar low cliffs with scrub - this very depressed at margin, higher slightly back. Then beach almost to Ohama point, backed by a scrub-covered ridge except opposite Ohama. Cliffs and littoral forest around Ohama point.

From Miyara point around to opposite the beginning of Shiraho are alternating stretches of beach with short stretches of low cliff, with almost continuous littoral scrub.

Opposite Shiraho is a long stretch of beach with boulders scattered along inner edge of reef flat. Back of this is broken scrubby forest, largely of Casuarina.

From Shiraho northward for 1 km. or so is a clean beach backed by a scrub-covered beach ridge. The end of this beach near Shiraho is of pebbles (or cobbles), the rest is mostly sand.

South of mouth of the Todoroki gawa are a couple of short stretches of low, undercut cliffs, separated by a stretch of rather high sand beach. Scrub back of all of this. At the mouth of the Todoroki the cliff is broken into many discrete flat-topped segments or rocks.

From here north is a long clear beach, backed by a high beach ridge covered by scrub or low littoral forest, to beyond the schist hills. Here it is interrupted by several large outcrops of schist rock, scattered over a half km. or so

July 25 – north end of island – 4 schist peaks. Examined next to last one. Grassy slopes, mostly Imperata with usual associates. Rocky top has dwarf shrubby depressed vegetation of Croton, Ficus, Glochidion, Smilax, Rubus, Rosa, Carmona (a), Psidium, Eurya, Ardisia, Paederia, Dianella

July 24 – Hirakubo

Beach ridge north from village to mouth of estuary.

The beach is abundantly interrupted by undercut remnants of rough limestone. The ridge has dense low littoral scrub forest of Pandanus, Scaevola, Premna, Thespesia, ~~Hibiscus~~, Ligustrum, Messerschmidia, ~~Raphiolepis~~ Pittosporum, Hernandia, Pouteria.

The estuary has Rhizophora, Thespesia, Excoecaria, Pandanus

The open flat to the front of the scrub has Spinifex, Ipomoea littoralis, Euphorbia chamissonis, Lippia, Lepturus, Cassytha, Vitex, Scaevola, Thuarea, Ischaemum

1956

July 26 - continuation of trip around island.

From just south of the n.w. point to the west point (Dacho Saki) the beach is thickly beset with undercut limestone remnants. There are only about 3 short stretches free of them. The nip is about 1.6-1.8 m. high. Below it is rather abraded, the rough pitting somewhat smoothed down. Above it is quite rough. There are a few neritids but not many. A few limpets and other snails, also.

The areas that were noted as burned on first visit to area south of Hirakubo have turned from black to rather light brown.

Between the first headland south of Ibaruma on the west coast and the area ~~south~~ west of Kabira there are scarcely any ~~of th~~ areas where grass runs very much up the steep slopes, as

it does so conspicuously north of there and on the other coasts.

On the volcanic knobs on the end of Kabira peninsula the cycads are exceptionally dense on the seaward sides, on the upper slopes. The lower slope are grassy.

On the very steep seaward side of the ridge back of Ogan Zaki is a thick scrub forest with what appears to be an unusual proportion of Garcinia spicata. This wood probably secondary, is very conspicuously wind-sheared and wind grooved.

1956 Ryukyu Is.

Jiba gawa,

July 26. 0.7 km. n. of Hirakubo

on sand ~~beach~~ ridge back of beach

38090 Hernandia sonora L. ok

2 common in littoral forest

Osmanthus zentaroanus Makino et aff.

2 91 ~~Ligustrum~~

occasional in littoral forest

~~92 Hedyotis~~

~~common on~~

2 92 Berchemia lineata DC

local in open places

Phyla nodiflora (L.) Greene

2 93 Lippia nodiflora L.

common in open places

2 94 Hedyotis

on rough pitted limestone remnant.

4 94a Euonymus japonica Thunb.

in littoral forest

July 24 – near Hirakubo Saki, north end of island

on rough pitted limestone remnants

2 95 Sedum formosanum N.E. Br. det. R. Moran

very local

1 96 (asclep.)

uncommon

4 97 Clematis grata var. ryukiuensis Tamura

common

3 98 Hedyotis

common

3 99 Raphiolepis liukiuensis (Koidz.) Nakai

common

4 100 Ficus pumila L.

local

---

2 m.

small tree 5 m. tall,

small tree; sterile.

prostrate, forming a close mat; flowers dried, apparently abortive.

prostrate

prostrate; leaves sub-fleshy, flowers white.

shrub 2.5 m. tall, flowers yellow-green.

5-10 m.

aug. fleshy, fruit ~~dry~~ scales dry.

twiner, flowers pale green; fruit immature.

vine, tangled in bushes.

prostrate, leaves scarcely fleshy.

shrub; fruit immature.

depressed shrub; sterile.

1956 Ryukyu Is.

same — open rolling summit of conical hill of schist.

38101 Eurya
4 rare

~~02 Sporobo~~

④ 02 (~~comp.~~) Carpesium cernuum L.
common

~~0~~

same — among schist boulders

1 03 (~~lab.~~) Ajuga pygmaea A. Gray
rare, almost dried up.

~~0~~

same — on grassy plain at foot of schist hill

2 04 Lespedeza cuneata G. Don
frequent

3 05 Fimbristylis
common

Rhaphis aciculata (Retz.) Desv.
1 06 Chrysopogon aciculatus
rare

1 07 Sporobolus elongatus R. Br.
occasional

same — in patch of littoral forest on beach

? 08 Morus australis Poir. var. (probably)
occasional

---

80 m.

low stiff bush; fruit immature.

heads nodding.

50 m.

prostrate, sterile.

40 m.

erect, branched at base, spreading by slender rhizomes.

A. Chase

culm ascending.

A. Chase

culms ascending

1 m.

small tree, sterile.

1956 Ryukyu Is.

July 27 - YCAT Compound

Quamoclit pennata (Desrouss.) Bojer

38109 Ipomoea quamoclit L.
r cultivated

July 28 - Agricultural Experimental Station, north of Ishigaki City

5 10 Acalypha ~~godseffiana~~ ? marginata (Poir.) Spreng.
cultivated, being propagated in large numbers

July 28 - w. of YCAT toward Kannon zaki - large Chert outcrops Partially scrub covered. Flora:

f Premna obtusifolia
f Carmona retusa
o Bauhinia
f Ficus virgata
f F. retusa
f F. wightiana
f Clematis
c Murraya paniculata
o Pittosporum tobira
r Imperata cylindrica
c Polypodium scolopendrium
o Miscanthus floridulus
r Psilotum nudum
c Hibiscus tiliaceus
r Commelina
r Morinda citrifolia
c Ampelopsis

---

1 km. w. of Nagazaki
1 m.

twining, flowers deep crimson red.

70 m

shrub 2 m. tall, leaves coppery bronze, edged with white.

r Arundo donax
r Clerodendrum inerme

Seaside rocks of ~~[illegible]~~ paleozoic breccia or conglomerate - The high tide level community here is of Zoysia tenuifolia
Limonium arbusculum
Sporobolus virginicus ?
Sesuvium portulacastrum
+ the prostrate legume found on Oganzaki.
Possibly Hedyotis but on a rock out in the sea which could not be reached.

July 29 Kannon Shrine

This shrine grove is mostly pine but with many Calophyllum around the building, not especially large trees. A coconut tree has some nuts.

Smaller trees of Podocarpus, Casuarina, + Codiaeum, Carica, , and some bananas planted around building, as well as some herbaceous ornamentals

Zinnia
Caesalpinia pulcherrima
Gomphrena globosa
Alternanthera versicolor
Rosa.

July 28 east of ~~Kannondake~~ Fu Dake

38111 Cleome viscosa L. ok
5 locally abundant in cultivated field

4 12 ~~Themeda japonica~~ Apluda mutica L.
local in grassy areas

July 29 – Ishi Soko, 0.5 km. s. of

6 13 Bridelia ovata Decaisne
scrub forest on summit of dissected hard limestone peak

5 m.

flowers yellow.

ok A. Chase rhizomes branching, above ground on stilt roots, culms ascending.

Banna Dake

100 m. shrub or small tree; fruits black when ripe.

1956

July 29 — Ishi Lok.
peak of fantastically dissected limestone, cut and channelled into jagged pinnacles and chasms, with large flutings on sides.

Vegetation principally Ficus, with Diospyros Mallotus, etc.
Dense scrubby forest but with some bare slopes.

a Ficus retusa
a F. wightiana
a F. virgata
c F. erecta
c Pouteria ferruginea
f Diospyros maritima
c Arundo donax
c Mallotus philippinensis
r Bridelia
r Garcinia spicata
a Arenga tremula
c Nephrolepis (falcate pinnules
c Premna obtusifolia
o Morus
r Pterocarpus?
Glochidion
la Pisonia aculeata
r P. umbellata

la. apocynaceous scandent shrub
Cassia
Pipturus
Broussonetia papyrifera
Ardisia
Flagellaria indica
Hoya carnosa
Asplenium nidus

1956 Ryukyu Is

July 30 - YCAT Compound, 1 km. w. of Nagatahi

along top of beach

38114 Ipomoea pes-caprae v. brasiliensis 1 m.
3 abundant on lime sand

I pes-caprae (L.) Sweet

prostrate, forming large mats, flowering scapes erect; corolla ~~magenta~~ rose purple with 5 deeper stripes in throat stigma capitate, white.

2 15 Vigna marina (Burm.) Merr.
common

prostrate, forming mats.

2 16 Calophyllum inophyllum L.
occasional

small tree, sterile.

July 31 - ~~bet. [illegible] and~~ 0.5 km. s. of Tedorohi gawa. 15 m.

3 17 Cycas revoluta Thunb.
in scrub vegetation on limestone

caespitose, thick stems covered by leaf bases, rosettes of spreading leaves, surrounding hemispherical mass of incurved fruiting carpels. Seeds orange red.

Aug. 1 - YCAT Compound, beach ~~in front~~ west of, 1 km. w. of Nagatahi

1 18 Morus australis Poir. 1 m.
in beach scrub

shrub 1.5 m. tall, with only new leaves on fruiting branches

Thrown up on beach by typhoon

2 19 Thalassia hemprichii (Ehrenb.) Aschers. 0 m.

1 20 ~~Cymodocea~~ Syringodium isoetifolia ~~Aschers.~~ (Kütz.) Dandy det. C. den Hartog 1969

leaves terete

2 21 Halimeda

3 22 Codium

1956 Ryukyu Is.

Aug. 1-2 - Ishigaki Island - Typhoon "Wanda" - Strong winds started July 31 but did not reach any marked intensity until the morning of Aug. 1 when during the forenoon velocities of 61 ~~m.p.h.~~ knots were recorded by the Ishigaki weather station.

Some examination was made of the coastal scrub vegetation along the beach, west of YCAT compound during the height of the wind, 11-12 a.m. Little perceptible effect was seen except a sort of watersoaking of leaves of Scaevola Ipomoea, Clerodendrum and Vigna. The sand was washed out from the seaward side of the vegetated berm, leaving the Ipomoea pes-caprae, Vigna marina and Ischaemum at the mercy of the wind.

The wind slackened some later in the day and a visit was made to Kannon Saki. Here there was little effect except some browning of leaves and

similar waterlogging where leaves were exposed to driven salt spray.

A strong, mostly dry wind blew during the night and all day Aug. 2. An examination was made from 3-5 p.m. ~~from~~ ~~[illegible]~~ along the beach near the compound and from Ishigaki City to the Yaraba Isthmus and back inland along the road behind Banna Dake to Ishigaki.

Where there was direct exposure to the sea almost all the leaves had turned brown. Pandanus seemed unaffected and Scaevola less so than most. Inland the only visible effects were many banana plants knocked down, some sugar cane knocked down, a few branches broken off Casuarina trees, and general almost complete defoliation of Leucaena glauca. ~~Around YCAT a few branches~~ ~~[illegible]~~ Along the coast Pandanus, Calophyll., Casuarina, ~~and~~ Scaevola, Ficus retusa suffered least.

Clerodendrum inerme seemed hit hardest, but Hibiscus tiliaceus, Vitex, [illegible], Premna, Scaevola, Ischaemum muticum, Ipomoea pes-caprae Vigna marina, Morus australis, Leucaena glauca, Vitex rotundifolia, Euphorbia chamissonis. Wedelia biflora, Sambucus, Euphorbia heterophylla all suffered browning of leaves and twigs.

Great quantities of Thalassia, Codium sp., Turbinaria Sargassum and Halimeda opuntia were thrown up on the beach.

In town the Morus suffered a considerable browning of leaves. The Garcinia not at all.

Upper end on limestone has also Vitex, Clerodendrum Mallotus (glaucous), Melia, Psidium.

Aug. 4 – Miyara Valley, e. side.

Ravine cut in fine bedded gravel, ~~with~~ partially cemented to conglomerate, overlain by post-miocene limestone. Beds of iron cement in the gravel.

Below it ravine forest –
Ficus virgata
F. wightiana
F. retusa F. kingiana?
Cyathea F. erecta
Pandanus F. (cauliflorous)
Ardisia
Arenga
Schefflera
Gardenia
Angiopteris
many other ferns
~~Gordia~~
Distylium
~~Clerodendrum~~ Callicarpa
Flagellaria
Piper
Toddalia
Alpinia speciosa
Elaeagnus Maesa
Rhus
Elaeocarpus japonicus
Glochidion hongkongense

Aug. 5 – upper Nagara V.

Erosion scar on schist and gravel

Sphenomeris
Gleichenia
Eurya
Blechnum
Lycopodium cernuum
Psidium
Distylium (a Symplocos)
Miscanthus
Rhynchospora rubra
Osbeckia
Rosa
Andropogon
Cinnamomum camphora
Ficus erecta
Imperata
small Andropogoneae

Gravelly clay terrace near peat bog –

Typical soil sequence (acc. Stensland) is top 18-24" fine reddish clay, next few inches a layer of clay with abundant small quartz pebbles, then thick layer (many feet) of generally clay material with miscellaneous angular fragments, mostly

small but many very large, but very poorly sorted, unbedded. Beneath this, a thick layer of yellow silty sand, then fossiliferous gray clay.

Topographically below this is a somewhat similar material showing limestone influence. The non-limestone one is grass-covered. The other is cultivated.

1936 Ryukyu Is.

Aug. 4 - Miyara 15 m.
bare limestone in road cut and around monument.

38123 Portulaca oleracea L. ok depressed, fleshy.
3 roadside ditch

5 24 Boerhavia mutabilis R.Br. prostrate, leaves pale beneath; flowers white.
common

3 25 Portulaca pilosa L. prostrate, fleshy; flowers crimson-magenta.
common, seen only ~~here~~.

Aug. 4 - 1 km. n.n.e. of Kawahara, about 5 km. n. of Miyara 40 m.
~~24~~ in erosion scar on thin gravelly sediments on low schist knoll.

5 26 Blechnum orientale L. ok
common

9 27 Sphenomeris chinensis (L.) Maxon
~~very common~~ abundant

6 28 ~~Andropogon~~ Cymbopogon tortilis (Presl) A. Camus culms erect, caespitose.
very common

Aug. 5 - Shira Mizu, upper Nagura Valley 35 m.

1 29 Echinochloa crusgalli (L.) Beauv ok A. Chase
edge of rice field

3 30 Angiopteris evecta rhizome barrel shape, covered by stipulate leaf bases; fronds 3-4 m. long, arching, joint fleshy.
in wooded ravine.
A. suboppositifolia W.H. de Vriese

2 31 Bridelia ovata Decne ? sterile shrub 3 m. tall, leaves somewhat glaucous beneath.
in wooded ravine

2 32 Melia azedarach L. ok small tree; fruit green.
bank of wooded ravine

Aug. 5 YCAT compound, 1 km. w. of Nagakaki ~~w. of Ishigaki City~~, 1 m.

2 33 Ischaemum muticum L. ok A. Chase
edge of thicket on sand flat back of beach

Aug. 5 - YCAT and Ishigaki city -
Salt damage to various plants is showing up more clearly now. The Casuarina which showed little or no effect right after the typhoon shows a considerable browning now. Calophyllum likewise. Leucaena leaves and twigs are dead as though singed. Ficus wightiana is losing its leaves in great quantities. The Morus in Ishigaki city streets has largely lost the brown leaves. Seems to be bursting into flower now.

Aug. 6 YCAT compound, 1 km. w. of Nagasaki

38134 5 Morus australis var. glabra Koidz.
planted

1 m.

small tree; completely defoliated after exposure to salt spray during typhoon, bursting into flower within 5 days after typhoon.